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An exploration of predictors, moderators and mediators of change in parent skills training programmes for externalising behaviour problems in children – who benefits most and how do they work?

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Contents

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Thesis abstract

Background: A key driver for early years strategies is the reduction of oppositional and defiant behaviour in childhood to prevent a negative life course of poor educational attainment and criminality. Despite a robust evidence base, manualised parent skills training programmes (PT) for externalising behaviour problems are only effective for approximately two-thirds of families. A limited number of variables that account for variance in outcome have been discovered. Finding further predictor, moderator and mediator variables will explain who benefits most, and how change occurs. This will ensure that families receive the most appropriate treatments for their profile of needs, and services deliver the available interventions in an efficient and effective way.

Objectives: A systematic review of the literature was conducted to explore progress in this area since two key meta-analyses published in 2006.

A primary study was carried out to examine whether parent attachment style, parenting self-efficacy and dysfunctional parental attributions predict, moderate or mediate the levels of externalising child behaviour problems reported by parents attending the Incredible Years PT.

Methods: Studies exploring variables influencing outcome in child behaviour following attendance at a manualised, evidence-based PT group for parents of children and adolescents aged 0-18 years were sought. Psychinfo, Medline, ERIC and Embase databases were searched for articles published between August 2004 and March 2013 with keywords 'parent', 'child', 'training', 'indirect effects' and 'oppositional behaviour' or related terms. 2853 articles were retrieved, from which 12 studies fulfilled criteria. Study quality was appraised and co-rated.

A pre-post, within subjects design was conducted with 79 parents attending the Incredible Years PT delivered in a Child and Adolescent Mental Health Service. Participants completed a battery of pre-treatment questionnaires measuring attachment style, attributions, self-efficacy and child behaviour. 52 parents

completed the same battery post-treatment, and missing data was carried forward in an intent to treat analysis. Data was analysed using multiple regression techniques, and mediation and moderated mediation analyses.

Results: The recent evidence base is populated by secondary analyses of intervention RCTs, and less robust non RCTs. The selection of maternal mood, parenting stress, parenting style and child demographics dominate, and the exploration of unique variables is limited. Significant findings are mixed and add no new variables to our understanding.

Significant changes in parenting self-efficacy and dysfunctional attributions were found post-treatment, and attachment style remained stable. A main treatment effect size of d=.3 was estimated, and a significant number of children fell below sub-clinical levels of problem behaviour (n=13, 15.7%). Baseline child-responsible attributions and self-efficacy accounted for up to 40% of the variance in baseline child behaviour. Attachment style did not contribute significantly to the model, but moderated parent-causal attributions. Post-treatment, attachment avoidance had a moderating effect on self-efficacy and child-responsible attributions, and a significant direct effect on outcome. The indirect effect of parental-attributions on child behaviour through self-efficacy was moderated by attachment avoidance which reduced the number of significant paths.

Conclusions: The call for PT studies delivered with fidelity in real world settings has been recognised, and more sophisticated statistical models of mediation are being adopted. There remains an exhaustive list of novel potential variables that future research needs to select and explore in primary research designs.

An evidence based PT is achieving statistically and clinically significant results for children referred for problem behaviour. Dysfunctional parent attributions and self-efficacy are predictors of both pre- and post-treatment levels of child behaviour, which could be screened for in the referral process. The evidence for a direct and

indirect role of attachment style on parent training outcomes adds a new candidate variable to the literature that warrants further exploration.

Chapter 1: Systematic review[a]

1.1 Title page

Predictors, moderators and mediators of outcome for child conduct problems following parent and child skills training programmes: a systematic review.

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[a]Written in accordance with Journal of the American Academy of Child and Adolescent Psychiatry (JAACAP) author guidelines (Appendix 5.1) except tables remain embedded in the text and font size not restricted to 10pts in line with thesis submission guidelines.

1.2 Abstract

Objectives: Limited variables have been identified that influence outcomes in parent skills training programmes (PT). Finding key variables will move understanding on from what works, to who benefits and how it works. A systematic review of the literature was conducted to explore progress since two meta-analyses published in 2006.

Methods: Studies exploring predictors, moderators and mediators of change in reported or observed externalising child behaviour following attendance at a manualised, evidence-based PT group for parents of children and adolescents aged 0-18 years were sought. Psychinfo, Medline, Embase and ERIC databases were searched for articles published between August 2004 and March 2013 with keywords 'parent', 'child', 'training', 'indirect effects' and 'oppositional behaviour' or related terms. 2853 articles were retrieved, from which 12 studies fulfilled criteria. Study quality was appraised and co-rated to weight findings.

Results: The recent evidence base is populated by secondary analyses of intervention RCTs, and less robust non RCTs. Maternal mood, parenting stress, parenting style and child demographics dominate, and the selection of unique variables is limited. Significant findings are mixed and add no new variables to the existing evidence base.

Conclusions: The call for PT studies delivered with fidelity in real world settings has been recognised, and more sophisticated statistical models of mediation are being adopted by larger research teams. There remains an exhaustive list of potential variables that future research needs to select and explore in primary research designs.

Keywords: mechanisms, variance, outcome, parent training, child behaviour

1.3 Introduction

Conduct Disorder (CD) and Oppositional Defiant Disorder (ODD) in children and adolescents, characterised by aggressive, non-compliant and disruptive behaviour, are among the most common reasons for referral to Child and Adolescent Mental Health Services in the UK[1] and elsewhere[2]. Prevalence rates between 5% and 20% are estimated, with highest rates in boys between 11 and 16-years of age[3,4]. Evidence that problem behaviour at 8 years of age can reliably predict criminal convictions by age 30 highlights their pervasive nature[5,6]. Left untreated, up to 40% of children with problem behaviours progress to conduct disorder, often involving substance misuse and criminality[7,8].

Several effective interventions to reduce disruptive behaviour exist, of which Parent skills Training (PT) is the most popular. PT developed in the 1960s from understanding that parents contribute to the development and maintenance of problem behaviours. The availability of group-based, manualised treatments to address parenting skill deficits is expanding[9,10]. Interventions including Positive Parenting Programme (Triple-P)[11], Incredible Years (IY)[12] and Parent Management Training Oregon (PMTO)[13] use social learning and behavioural principles to decrease oppositional behaviours by reducing negative, harsh and inconsistent parenting. Parents increase their knowledge and skills through role play, discussion and vignettes, sometimes concurrent with child interventions. Extensive evidence indicates that PT is effective across a variety of ages, settings and co-morbidities[14]. This has contributed to their 'gold standard' status in best practice guidelines, with the National Institute for Clinical Excellence (NICE)[15] supporting their use for children aged 3 to 10 years.

However, meta-analyses report mixed effect sizes[16,17], and even the best interventions are only effective for approximately two-thirds of families[18,19]. While effectiveness studies examine 'what works', they do not answer 'for whom does this intervention work and how?'. Increased understanding of differential outcome is of theoretical and clinical importance to identify families who require alternative treatments[20-22]. In a review of evidence based treatments (EBT) for disruptive

behaviour spanning 29 years, Brestan and Eyberg[18] called for research to move beyond questions of effectiveness to mechanisms of change. Recently, Eyberg et al.[9] updated the literature since the initial review and found an increase in EBTs from twelve to sixteen. However, despite the growing number, an understanding of the variables that influence outcome remains limited.

The understanding of which families are more or less likely to benefit from PT, and why, is explored through the identification of predictor, moderator or mediator variables. Research in this area is dominated by the seminal work of Baron and Kenny[23,] who provided guidance on how to test for their presence. However, weaknesses in this model have led to attempts to refine and standardise conceptual definitions[24,25], and statistical models[26]. Current understanding defines predictors as baseline variables accounting for better or worse outcome regardless of treatment condition (the main effect). Moderators influence the direction and magnitude of the relationship between treatment and outcome, identifying subgroups with more or less likelihood of change (who responds and who does not). Mediators are intervening variables that occur during treatment and may account for the relationship between the predictor outcome variable (how an intervention works). Certain mediators may highlight the processes that are causally responsible for improvements, but not necessarily be those mechanisms of change[27].

A number of studies have attempted to identify relevant child, parent, family and programme characteristics. Frequently examined child variables include the severity of pre-treatment behaviour, age and gender[16,28]. Common family demographics include socio-economic status, family size and marital status[29]. Popular parental attributes include maternal psychopathology, maternal stress and parenting style[30-32]. Two meta-analyses have attempted to elucidate variables accounting for differential outcome in PT[33,34]. They synthesised data from sixty-three and thirty-one PT intervention trials between 1974 and 2004, and found the most salient factors were financial disadvantage[33] and maternal mental health, particularly maternal depression[34]. Both reviews concluded that children of disadvantaged parents due to

low household income, divorce and depression showed poorer intervention outcomes than children with lower levels of adversity.

1.3.1 Rationale for review

There remains an exhaustive list of candidate variables to explore. Without a better understanding of these, a proportion of families will continue to gain less from PT and be at increased risk of negative life events. Given the current climate of decreasing resources and increasing accountability for public health impact, predictor, moderator and mediator research has the potential to advance theory, improve clinical practice and reduce the cost of disruptive behaviour for children, families and society. While large meta-analyses can combine findings from a wide range of programmes, they are not sensitive to more subtle information.

1.3.2 Aims of the review

This systematic review explores areas that have previously been identified as targets for improvement, which are less suited to meta-analysis; whether the selection of candidate variables is theory based, more sophisticated mediation models are being used, and research conducted with clinical populations in real world settings. With this in mind, the following questions will be addressed:

- What parent, child or other variables have been investigated as potential predictors, moderators or mediators since the last meta-analyses?
- Have any of these been found to have a significant effect on outcome?
- What is the current evidence base regarding differential outcome of PT?

1.4 Methodology

The review process was conducted with guidelines from Petticrew and Roberts[35] in mind, recognising that reviews that ask questions beyond effectiveness may require more complex questions, inclusion criteria, and multiple critical appraisal.

1.4.1 Search Strategy

A literature search of PsycINFO, MEDLINE, Embase, and ERIC databases was conducted between February and March 2013. References of selected articles were manually screened to retrieve additional articles. The search was limited to articles published between September 2004 and March 2013 to review the literature published after the search range of the two previous meta-analyses (1974 to August 2004[33]; 1980 to September 2004[34]). To identify studies regardless of their emphasis on parent variables, child outcome or mechanisms of change, and due to wide terminology, the following search terms were truncated and entered with the Boolean operators [(1 AND 3) AND (2 AND 5)] AND [(1 AND 3) AND 4] AND [(2 AND 5) AND 4] combined, as shown in Table 1.1.

Table 1.1: Employed search terms for article retrieval

	Population 1	**Population 2**	**Intervention 3**	**Comparison 4**	**Outcome 5**
	AND	**AND**	**AND**	**AND**	**AND**
	parent*	child*	intervention	predict*	external*
OR			training	mediat*	conduct
OR			programme	moderat*	oppositional
OR			education	multi-level	aggress*
OR			skills	mechanism	problem
OR			treatment	indirect	behav*
OR				varia*	emotion*
OR					outcome

1.4.2 Inclusion criteria

Studies with an objective to explore variables accounting for differential outcome in reported or observed child conduct problems following attendance at a manualised, evidence-based PT group for parents of children and adolescents aged 0-18 years were sought. 'Parent Training' can vary in content and delivery depending on the social and cultural context. This review explores PT of the kind reported by Eyberg and colleagues[9,18], and others[36]; an intervention for the acquisition of parenting skills

to reduce disruptive behaviour. PT studies with ADHD samples were only included if they reported a primary question, intervention and outcome measure for externalising conduct problems and general parenting skills separate from ADHD symptoms.

1.4.3 Exclusion criteria

Articles were excluded if there was insufficient evidence in the title, abstract or methodology of:

1) A manualised, group-based PT with a theoretical model for active skill acquisition to manage problem behaviour in 0-18 year olds.
2) A standardised primary outcome measure of externalising child conduct problems, such as the Eyberg Child Behaviour Inventory[37], Achenbach Child Behaviour Checklist[38] or Dyadic Parent-Child Interaction Coding System[39].
3) Any statistical analysis of direct or indirect effects.
4) Data gathered from a quantative empirical study, published in peer reviewed, English language journal (not meta-analyses, book chapters or dissertations).
5) More than 50% of the sample meeting clinical cut-off criteria for behaviour problems.
6) An article published since Lundahl et al.[33] or Reyno et al.[34].

A search of the Cochrane library of systematic reviews revealed a review of PT effectiveness for the 0-3 years age range[14], two meta-analyses of the effectiveness[40] and moderating variables[41] of Triple-P, and programme components[36], but no similar systematic review published under these search terms.

1.4.4 Search results

The search strategy identified 2853 articles, augmented by an additional 17 from a manual search of the references of articles selected for full review. Initial screening of all retrieved titles excluded 2596 articles clearly meeting exclusion criteria by virtue of an absence of PT or conduct problems in the design. As the remaining 274 articles had been generated from across the four databases, 39 duplicates were excluded prior to the abstracts being screened, and a further 211 excluded on the

basis of information provided in the abstract. 63 articles were screened in full to determine further details about whether the nature of the PT delivered or outcome measure used met criteria, leaving 12 articles for review (Figure 1.1).

1.4.5 Critical appraisal of study quality

Due to the relatively small number of articles meeting inclusion criteria, study quality was not a specified requirement. Few social science critical appraisal tools have undergone their own reliability or validity process[42,43]. In the absence of an established tool for the appraisal of multi-level studies, quality was assessed using a pro forma developed using Cochrane collaboration guidelines for key sources of bias, criteria for "well conducted" EBT studies applied by Eyberg and colleagues[44,45], and concerns unique to the analysis of indirect effects. Adherence was rated according to Scottish Intercollegiate Guidelines Network (SIGN 50)[46]; 'well-covered' (2 points); 'adequately addressed' (1 point); 'poorly addressed', 'not addressed', 'not reported' and 'not applicable' (0 points), summarised in Table 1.2. As seven of the twelve studies were secondary analyses of published effectiveness RCTs, the original studies were also appraised by the primary author. For quality control, a second reviewer trained to masters level appraised the five primary studies. Reviewers agreed on 73% (51/70) of ratings; differing by one point on seventeen items, and two points on two items, which were discussed to reach consensus.

Figure 1.1: Search results and exclusion process

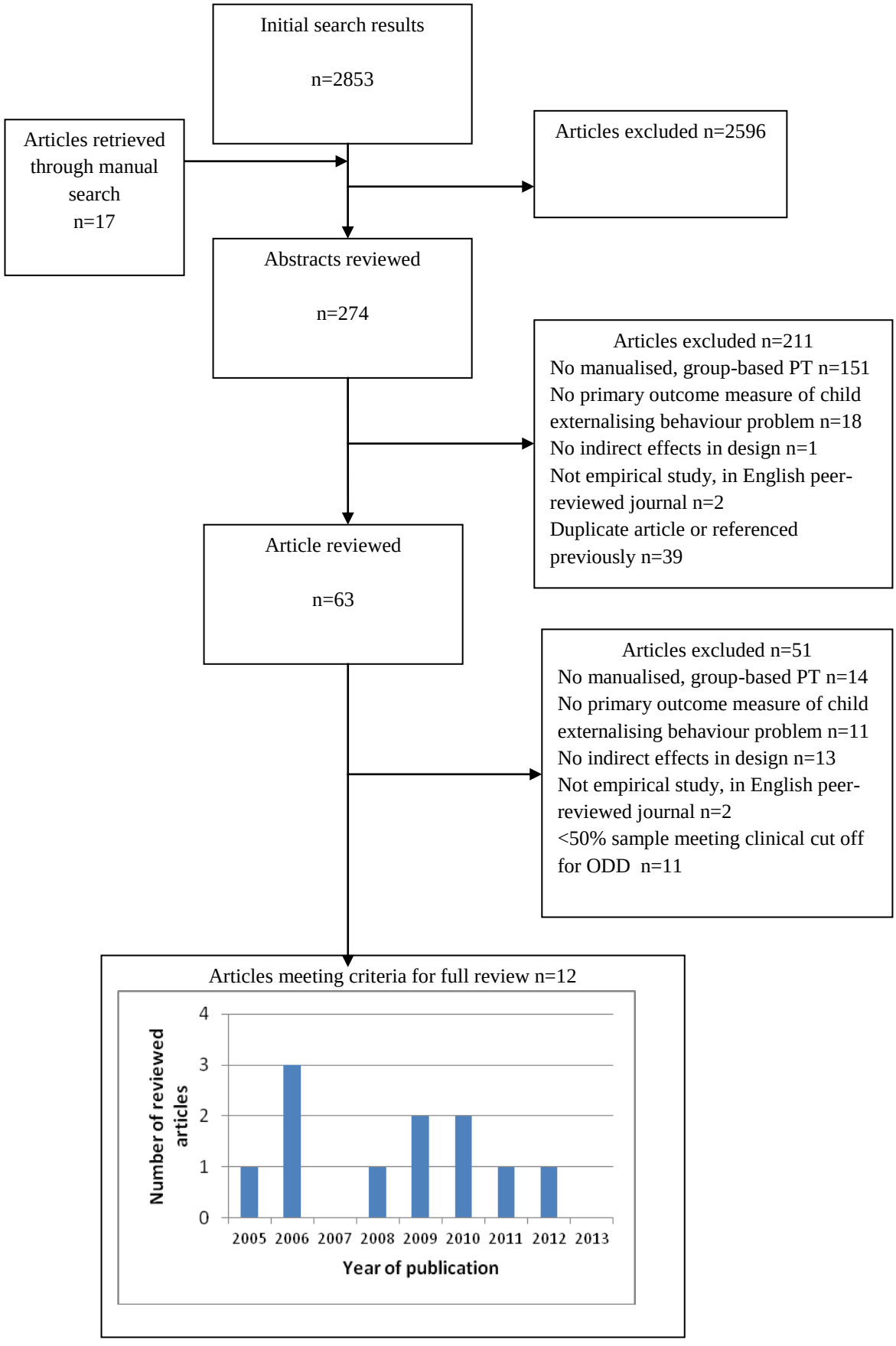

Table 1.2: Quality of studies

Criteria	Beauchaine et al.[47;a1]	Hemphill & Littlefield[48;b]	Gardner et al.[49;b]	Leung et al.[50;b]	Lavigne et al.[51;a2]	Eames et al.[52;a3]	Fossum et al.[53;a4]	Gardner et al.[54;a3]	van den Hoofdakker et al.[55;a5]	Baruch et al.[56;b]	van Loon et al.[57;b]	Hutchings et al.[58;a3]
Rationale – is previous relevant background literature discussed?	2	2	2	2	2	2	2	2	2	0	2	2
Objectives – Does the study address a clear and appropriate question?	2	2	2	2	2	2	2	2	2	0	2	2
Selection - Is the recruitment of participants adequate and transparent?	0	0	2	0	0[a]	2	2[a]	2	0	0	1	2
Sample – is the sample described and representative of the population of interest?	2	1	2	1	2	2	2	2	2	1	2	2
Allocation - Study design	1	0	2	0	2[a]	2	2[a]	2	1[a]	0	0	2
Integrity – is the PT evidence based and delivered with adequate fidelity?	1	1	2	2	2[a]	2	2	2	1	1	2	2
Data collection – Is a reliable, valid, multi-source outcome measure used?	2	2	2	1	2	2	2	2	1	1	1	2
Is the selection of candidate independent variables adequate?	1	1	1	1	2	2	1	2	2	0	1	2
Data analysis – is an appropriate test for the association between two variables used?	2	1	2	2	1	2	2[a]	2	2	1	1	2
Attrition – is missing data acceptable levels and managed appropriately?	2	1	2	1	1	2	2[a]	2	2	0	1	2
Results – are clear and logical results reported?	2	2	2	2	1	2	2	2	1	1	1	2
Comparison – are findings compared with other studies and inconsistencies addressed?	1	2	2	2	2	2	2	2	2	0	2	2

Limitations – addressed?	0	2	2	2	1	2	2	2	2	2	2	2
Implications – wider implications for research and clinical discussed?	1	1	1	2	1	1	1	2	1	1	2	1
Total (max 28)	19	18	26	20	21	27	26	28	21	8	20	27
Primary article (max 26)	n/a	n/a	n/a	n/a	20[59]	25[60]	23[63]	25[60]	20[62]	n/a	n/a	25[60]

Note: well-covered' (2 points); 'adequately addressed' (1 point); 'poorly addressed', 'not addressed', 'not reported' and 'not applicable' (0 points)

[a] Study drawing on data from a previous RCT, and criteria appraised from the original paper where insufficient information was available in the review article.

[b] Study appraised by co-rater.

[1-5] primary RCTs appraised with same pro forma excluding variable selection and mediation analysis criteria (max 26):

[1] Insufficient information to locate primary RCTs for appraisal.

[2] Lavigne et al.[59]

[3] Hutchings et al.[60]

[4] Larsson et al.[61]

[5] van den Hoofdakker et al.[62]

1.5 Results

1.5.1 Study characteristics

The studies took place in America, Asia, Australia, Europe and Scandinavia, and are summarised chronologically in Table 1.3. Four studies did not have behaviour-based eligibility criteria, but are included as 50% of the sample met clinical cut-off criteria[48,50,56,57]. Four were explicitly designed to explore variance in outcome[48-50,57]. Three of these adopted a pre-post group design, and Gardner et al.[49] was a RCT. Hemphill & Littlefield[48] did not state the design, but did not report a control group. Six studies re-analysed data from primary RCTs up to five years later[51,52-55,58]. Of these, three UK studies[52,54,58] used the same companion paper[60]. The outstanding study, Beauchaine et al.[47], combined data across six RCTs from the same research team. As methodological differences can produce different conclusions about the same intervention, (e.g. where RCTs can overestimate effect sizes)[35], RCTs and non-RCTs are separated, according to quality ratings.

Table 1.3: Study Characteristics

Study	N	Country	Setting	Study design	Eligibility Criteria	Intervention [a]	Length of intervention	Age range Mean (SD)	Male gender n (%)
Beauchaine et al.[47]	514	UK	Non-clinical	Combined data from 6 RCTs	CD 6 mths duration 2 SD above mean on ECBI DSM-III or DSM-IV criteria for ODD and/or CD	317 PT 60 CT 38 PT + CT 24 PT + TT 23 CT + TT 25 PT, CT + TT	PT CT 18-22 x 2hr TT 4 x day	3-8.5 5.4 (1.3)	402 (78.2)
Hemphill & Littlefield[48]	106	Australia	Clinical	Pre-post group	No behavior based criteria	PT + CT + PT & CT	8-10 x 1.5 hr	5-14 8.8 (1.9)	85 (80.2)
Gardner et al.[49]	76	UK	Clinical	RCT Tx n=44 Waitlist Cx n=32	Score above clinical cut off on ECBI-P scale (>11)	PT	PT 14 x 2 hr	2-9 6.0 (2.1)	56 (73.7)
Leung et al.[50]	480	Hong Kong	Clinical	Pre-post group	No behavior based criteria Mean ECBI-P score 129.72 Mean ECBI-I score 13.79 49.5% in clinical range of ECBI-I	PT	PT 4 x 2hr + 4 telephone consultations	2-12 3.3 (1.2)	314 (65.4)
[b1]Lavigne et al.[51]	117	USA	Clinical	RCT Tx n=86 Minimal Ix Cx n=31	DSM-IV criteria for ODD 90th percentile CBCL-Ext	PT	PT 12 hr 6 or 12 session	3-6.11 4.6 (1.0)	62 (53.0)
[b2]Eames et al.[52]	86	UK	Clinical	Tx only sample from previous RCT (n=104)	Score above clinical cut off on ECBI-P (>127) or ECBI-I (>11)	PT	PT 12 x 2 hr	36-59 mth 46.4 mth/3.9 yr (6.6mth)	80 (52.3)

[b3]Fossum et al.[53]	121	Norway	Non clinical	RCT Tx n=99 Waitlist Cx n=28	DSM-IV criteria for ODD. Above 90th percentile on ECBI-P Norwegian norms	47 PT 52 PT + CT	PT 12-14 x 2hr CT 18-20 x 2hr	4-8 6.6 (1.3)	74 (79.8)
[b2]Gardner et al.[54]	153	UK	Clinical	RCT Tx n=104 Waitlist Cx n=49	Score above clinical cut off on ECBI-P (>127) or ECBI-I (>11)	PT	PT=12 x 2hr	36-59 mths 46.4mth/3.9yr (6.6mth)	80 (52.3)
[b4]van den Hoofdakker et al.[55]	94	Holland	Clinical ADHD	RCT Tx n=47 TAU Cx n=47	No behavior based criteria 75.5% DSM-IV criteria for co-morbid ODD 16.0% DSM-IV criteria for co-morbid CD	PT + TAU	PT 12x2hr	4-12 7.4 (1.9)	76 (80.9)
Baruch et al.[56]	123	UK	Clinical	Pre-post group	No behavior based criteria Mean CBCL-Ext score 69.1 (SD=7.9) above clinical cut off of 60	PT	PT=6 x 2hr	10-17 14 (1.4)	71 (57.7)
van Loon et al.[57]	101	Holland	Clinical	One group, pre-post	Score within 98th percentile of CBCL-Ext	PT + Child CBT	14x3 hr	6-12 9.3 (1.2)	86 (85.1)
[b2]Hutchings et al.[58]	153	UK	Clinical	RCT Tx n=104 Waitlist Cx n=49	Score above clinical cut off on ECBI-P (>127) or ECBI-I (>11)	PT	PT=12x2hr	36-59 mth 46.4mth/3.9yr (6.6mth)	80 (52.3)

Note: [a] Where PT = parent training, CT = child training, TT =teacher training.

[b] Secondary to primary paper: 1 Lavigne et al.[59]; 2 Hutchings et al.[60]; 3 Larsson et al.[61]; 4 van den Hoofdakker et al.[62]

1.5.2 Study findings

1.5.2.1 RCT studies

Gardner et al.[49] employ a robust design in a real world setting, with multi-source report, alongside a 90% retention at 18 months. It is the only RCT designed to explore mediators, although the selected variables have been widely researched. It reports moderate to large effect sizes for the main treatment, and that increases in positive parenting mediated change in problem behaviour, accounting for 20% of variance in outcome. Although the estimated sample size of 44 was exceeded, the parameters on which it was based are not reported, and the study is likely to be underpowered for mediation analysis[63]. The causal steps approach[23] is least likely to detect indirect effects due to low power, reducing the validity of their findings. An over emphasis on policy, over clinical or research implications limits the discussion.

Three studies share data from the same effectiveness RCT[60]; including high participant agreement from a representative sample of parents attending PT in eleven areas of Wales, UK. They avoided method overlap by using distinct modes of measurement of mediator and outcome. Retention at six month follow up was 86.9%, with missing data carried forward in an ITT analysis. Reported treatment effect sizes are moderate to large depending on the subscale used, although the reader is left to find an unsubstantial effect size for the observation method within tables. Although the recruitment of 153 families to the primary trial exceeds power calculations, it may be underpowered for the three secondary analyses that follow.

Gardner et al.[54] apply an ecological model of risk to the selection of potential moderators and mediators, although this is done post hoc as the measures were selected for the primary study. Using the Sobel test[64] assumes a normal distribution of the indirect effect, which is misguided when alternative non-parametric methods exist[65]. Their findings did not replicate the results of two recent meta-analyses, which were discussed alongside wider implications. The authors recognised that the results should be interpreted with caution due to the original trial being powered for a main effect analysis. Hutchings et al.[58] are similarly limited in the potential to inform the evidence base of new variables. Simple and multiple mediation models

were analysed using macros written by Preacher and Hayes[26] and resampling of the data with bootstrap techniques, a more sophisticated technique for testing mediation models with small sample sizes. Improvement in maternal depression was found to be a significant and partial mediator of improvement, suggesting that PT is more effective when it also addresses skills deficits associated with maternal depression. However, possible conceptual overlap between parenting style, stress, and self-efficacy in the hypothesized multiple mediation model risks multicollinearity between variables that was not acknowledged in their limitations. In combination with the over-analysis of the same sample, their findings should be interpreted with caution. Eames et al.[52] present reliability and validity data for the Leader Observation Tool (LOT[66]), and explore treatment fidelity as a new candidate predictor. Positive leader skills categories significantly predicted change in reported and observed parenting behaviour, which in turn predicted change in child behaviour. The study was limited in the sample size of the group leaders, although obtaining data from twelve community intervention groups by twenty-two leaders lends strength to its findings.

Fossum et al.[53] re-analyse data from a trial published in the same year. Limited information about the flow of participants is described, and reference to the primary article is needed to appraise key sources of bias. Stringent eligibility criteria and impressive retention rates at one year follow up ensure the results are based on a representative sample. They applied more sophisticated mediation models advocated by Preacher and Hayes[26]. Contrary to other findings, positive parenting did not have an indirect effect on outcome, which they discuss with reference to subtle cultural differences in the Norwegian sample.

Van den Hoofdakker et al.[55] re-analyse data from a previous study to explore six predictor and moderator variables. Three of these are child demographic variables which are the least informative of candidate variables. Information is available without the need to consult the original paper, including transparent reasons for a low uptake rate of 59%. Limited information was provided on research supporting the modified PT, and a moderate effect size was only reported in the primary paper. PT

was delivered alongside routine clinical care, a common service model used in clinical settings, but one which has the potential to confound results if an active ingredient is not adjusted for. Primary outcome measures of child behaviour are limited to parental report, increasing the risk of bias.

Lavigne et al.[51] provide strong rationale for their secondary analysis. Clinical screening of twenty-four US paediatric practices had the potential to recruit a large sample, but a disappointing uptake resulted in an over-representation of middle class families. Seven potential predictor and moderator variables were constrained to previously administered measures, with limited theoretical justification. Significant trial effects on both the ECBI and CBCL are reported, but insufficient information is available in either article to calculate respective effect sizes. Equivalence testing establishes whether a lower cost, more convenient treatment is as effective as a more costly, less convenient intervention[67], making the findings attractive for policy makers. This study draws on data where similar treatment gains emerged for bibliotherapy, and 12 hour PT. This suggests that predictors and moderators may inform which families receive a particular form of treatment, but complicates direct comparison with other studies with more standardised PT delivery.

1.5.2.2 Non RCT studies

Van loon et al.[57] recruited participants from child community mental health agencies for a pre-post study. A 71.7% uptake rate, transparent reasons for refusal and eligibility score above the 98th percentile on CBCL-Ext ensured a representative sample of children disruptive behaviour. The selection of parental mood was theory based, acknowledging the bi-directional relationship between depression and child behaviour. A moderate amount of missing data was managed through Multiple Imputation[68]. Authors recognised limitations in its non-RCT design, the use of parent report as the only source of outcome, and attrition rate. Nonetheless, this is the most robust non RCT due to its recruitment and implementation of PT, and attempts to increase internal validity through MI. However, although it provides more support for the role of maternal mood, it fails to add novel findings to the evidence base.

Leung et al.[50] rely on the Triple-P evidence base to support a non RCT design, although deliver it in less sessions, and with no fidelity measures. The recruitment of 480 participants is good, although whether this is biased through selective uptake is not reported. In addition, the lowest percentage of children meeting clinical cut off for behaviour problems, and 62.3% attrition limits its external reliability. Eight candidate predictor variables were explored, three of which (service type, referral source, immigrant status) have limited impact outside their service. However, all regression steps and the amount of variance explained by the model are reported. The Parenting Sense of Competence Scale[81] restricts self-efficacy statements to a seven-item subscale, questioning whether they have actually measured this construct. This is an example of practice based evidence specific to Hong Kong, with policy and clinical implications particular to that setting.

Hemphill and Littlefield[48] acknowledge the scant research into predictors of treatment outcome and adopt a pre-post design in a clinical setting. They do not employ behaviour-based eligibility criteria, but report that 'most' children are in the borderline or cut off range. Six predictor variables were explored; the main treatment effect was not reported, and there is insufficient data from which to calculate it. No power calculation was reported, and only completer data was analysed; increasing the risk of decision error and biased results. However, data about child behaviour was collected from parents and teachers across settings, and they achieved a respectable completion rate. The combination of the selected variables accounted for 26% of the variance in outcome, making results easy to disseminate. However, various combinations of PT and CT with different theoretical models complicates direct comparison with SLT based PT.

Baruch et al.[56] has the least robust methodology, with no explicit objectives relating to indirect variables and minimal details about their sample characteristics. However, the intervention is recommended by the Office of Juvenile Justice and Delinquency, they recruit over a three year period and are one of few studies to report on their ethics process. Candidate variables are selected on the basis of t tests

that indicate subscales of interest, rather than the explicit testing of a priori hypotheses, exposing them to criticism of 'trawling for data,[27]. A combination of drop out and incomplete data contributes to a high attrition rate, potentially compromising the reliability of the results. A moderate trial effect size, and the clinical significance of results are reported. However, this study is designed with an individual service model in mind, and adds little to the wider literature. It does warrant inclusion as an example of how the call for research can be met through practice-based studies.

Beauchaine et al.[47] combined data from six RCTs conducted by the same research team over 20 years. It is unclear if these were individually published, restricting critical appraisal of the original data. All 514 participants met sound eligibility criteria to ensure a representative sample of children with behaviour problems. Participants received various combinations of PT, CT and TT, resulting in non-equivalent data. Results based on maternal report and independent observation yield a different set of moderators and effect sizes ranging between d = 1.59 and d = .33. A research model generating a wealth of data from an established research team could be influential. However, this is at the risk of data generated across studies using different versions of PT as refinements to the IY series were made. Disappointingly, the authors do not discuss any possible limitations.

1.5.2.3 Synthesis of RCT and non-RCT findings

Sample characteristics

Both RCTs and non-RCTs recruited participants from the UK and Holland, with additional RCTs in USA and Norway and non-RCTs in Australia and Hong Kong. A similar number of participants were recruited to both types of study (N=800 and N=810), accounting for 38.2% and 38.7% of the overall review sample, with participants in Beauchaine et al.[47] (2005) comprising the final quarter. The same UK sample[60] accounts for 49.0% of the RCT data, which may bias the evidence base if decision errors arise from the secondary analysis of trials underpowered for mediation. All RCTs employed clinical eligibility criteria, with variations in the screening measure, subscale, and threshold employed. All non RCTs described a

sample where the majority of children had clinical levels of disruptive behaviour, but only one[57] employed a clinical cut-off criteria. Males were equally represented in both RCTs (63.5%; range 52.3% to 80.9%) and non-RCTs (68.6%; range 57.7% to 85.5%). Both subgroups had a similar lower mean age (3.9 and 3.3 years), with the non RCTs reporting the highest mean age (14.0 years) and delivering PT up to 17 years compared with 12 years in the RCT subgroup. The Incredible Years was the most popular PT, delivered in six of seven RCTs, with wider variation in the non RCT studies.

Overall, studies analysed data from 2094 subjects; 1702 unique, and 392 (18.7%) were the same participants from Hutchings et al[60]. A mean sample size of 177 (SD 145.0; range 76 to 514) was skewed by the Beauchaine et al.[47] study. PT was targeted at children aged 2-17 years, with an overall sample mean of 7.1 years (SD 2.6; range 3.28 to 14 years). 1386 (66.1%) of the sample were male, which reflects the pattern of problem behaviour in the population.

Main treatment effects

Six PT were delivered (Table 1.4), of which four were EBTs, or based on EBTs defined as 'probably efficacious' by Eyberg and colleagues[9,18]. All have web-based resources, although only two studies reported the relevant website[55,56]. All but three non-RCT studies reported efforts to maximise treatment integrity. The majority of participants (N=1282; 61.2%) attended PT exclusively, with others receiving combinations of PT and CT[48,53,57], or PT, CT and TT[47]. PT was typically delivered in 1.5 to 2 hour sessions, however the dose varied between four[50] and twenty sessions[53], complicating the synthesis of findings about what active ingredients produce change.

All studies used a valid and reliable tool as the primary outcome measure; a third of studies exclusively relied on parent report[50,55-57], posing a higher risk of bias. Eight studies collected additional data from sources including teachers and independent, blinded observers. The most robust approach is reported by Fossum et al.[53], summarised in Table 1.5. The reporting of internal consistencies for study samples was varied, limiting critique about the reliability of data. Few studies reported power

calculations, or were powered for mediation, risking an evidence base that is informed by studies with insufficient power to detect indirect effects. Studies reported on statistical change, reliable change and clinical change. The reporting of effect sizes is advocated to standardise such heterogeneity and allow for meta- or sensitivity analyses. Significant treatment effects were reported in all studies, but effect sizes needed to be calculated[50], located in the primary RCT[55], or were not reported[48,51] in some.

Selective reporting of subscales with larger effect sizes was observed, particularly in the UK 'trilogy' of studies, which could distort the picture if the common origin is not recognised. Fidelity measures were more likely to be reported in RCTs, increasing confidence in their integrity. However, this is not reflected in larger effect sizes, with all relevant studies reporting at least a moderate effect size. All large effect sizes were estimated on the ECBI-I, alongside moderate effects on the ECBI-P, demonstrating the importance of appraising reporting bias. The largest effect size is reported by Beauchaine et al.[47], which should be interpreted with caution for the reasons described. Excluding the two studies without reported effect sizes, Beauchaine et al,[47] and two of the three UK studies[52,58] reporting the same effect size resulted in a mean weighted effect size of 0.69 for the remaining seven articles, a significant overall effect size $Z=15.00$, $p<.001$. There was significant heterogeneity in effect sizes ($Chi^2=30.52$, $df=6$, $p<.001$).

Indirect effects

Table 1.6 shows a total of fifty-two broad variables were explored; comprising of thirty parent, eleven child, six family and five other variables (treatment dosage, service type, reason for referral, programme completion, leader skill). The number of variables explored ranged between one[56,57] and nine[47], with a mode of two. Parent variables were dominated by parental mood (n=10), style (n=7), stress (n=4) and self-efficacy (n=3). Child demographics such as co-morbidity, age and gender also featured heavily. The three UK studies tested the same variables, alongside leader skill[52], family and child demographics[54] and maternal mood[58]. With much variance in outcome still accounted for, and clear results for mood and parenting style already,

the lack of novel variables is disappointing. Selection should be theory based to avoid arbitrary variables adding little to our understanding[24,69]. An explicit rationale was less evident in the non-RCT studies; RCT studies were more likely to present a theoretical argument, but did this post hoc where they were pre-determined by the design of original trials. The practice of re-analysing popular variables, particularly from the same population, will maintain criticism about the lack of progress in this area[22].

A total of seventeen analyses were conducted; eight predictor, four moderator and five mediator. Eames et al.[52] and the four non-RCTs all limited their design to predictor analyses, which tell us about risk factors, but less about the mechanisms of change that occur. Mediator analyses were reported by Gardner et al.[49] and Hutchings et al.[58], and four studies combined two models. It is possible that terminological and conceptual inconsistencies exist[70]; when the terms are used interchangeably, or claims that a moderator or mediator has been discovered when inappropriate analyses have been conducted[71]. Leung et al.[50] identify socio demographic variables, service type and reason for referral as baseline predictors, alongside parenting self-efficacy, stress and mood which are also likely to influence the magnitude and direction of change. Fossum et al.[53] accurately differentiate child psychopathology as a predictor, from the mediating roles of parenting style, stress and mood. However, a review of the appropriate use of definitions across studies is restricted by a lack of hypothesised pathways modelled in diagrammatic form, or the reporting of regression steps.

Non-RCTs presented significant findings for the role of parent mood[57], pre-treatment levels of parenting stress, lower household income, new immigrant status and higher attendance rates[50], pre-treatment problem behaviour and parent-child interaction[48] and higher initial levels of CBCL-withdrawn subscale scores[56] as predictors of outcome. Of these, we can be most confident in the findings of van Loon et al.[57]; and although parental mood has a strong evidence base already, it provides further support in a clinical setting. The weakest study has limited impact on current understanding but is an example of regression-based research in an existing service[56].

RCTs presented significant findings for child co-morbidity and temperament[51,53,57], parenting distress and stress[51,53] and parenting style[52] as predictors. Significant moderating effects of child co-morbidity, gender and age, and maternal mood, education and self-efficacy[51,54,55] were reported. Outcome was mediated by change in parenting[49,52-54,58], and maternal mood[54,58]. However, three of these mediator studies draw on the same data which may distort the picture compared with independently replicated results.

The findings for the predictive role of parenting stress is mixed; Leung et al.[50] found that higher levels of parenting stress predicted greater improvements in child behaviour, while Fossum et al.[53], a more robust study, found that parenting stress was a significant predictor of poorer outcome, and two other studies reported no significant effects[47,57]. The role of maternal depression has equally inconsistent results; Hutchings et al.[58] found improvement in maternal mood to be a significant partial mediator of change, while Fossum et al.[57] did not. Van Loon et al.[57] found mixed results within their own study, reporting that children of non-depressed mothers improved more using a dichotomous scale than a continuous score of the same measure.

Table 1.4: Parenting interventions delivered

PT	PT website	[a]EBT	Theoretical model	Study	Fidelity	[b]Main treatment Effect size				Follow up[e]
						ECBI-P	ECBI-I	CBCL-Ext	DPICS-R	
Exploring Together	*www.exploringtogether.com.au*	N/A	CBT, family therapy, psycho-dynamic	Hemphill & Littlefield[48]	Yes			NR		*Post*
Incredible Years	*www.incredible years.com* *www.incredibleyearswales.co.uk*	PE	SLT	Beauchaine et al.[47c] Gardner et al.[49] Lavigne et al.[51] Eames et al.[52] Fossum et al.[53d] Gardner et al.[54] Hutchings et al.[58]	Yes Yes Yes Yes Yes Yes Yes	d=1.59*** d=.48** d=.63** d=.65** d=.63** d=.63**	d=.55** NR d=.89*** d=.47** d=.89*** d=.89***	d=1.03*** NR	d=.33* d=.78*** NR d=.21* d=.21* d=.21*	6[f], *12*[f] *Post*[e], 6, 18 *Post*[e], 12 *6*[f] , 12 *6*[f] *6*[f]
Parenting with Love and Limits	*www.gopll.com*	N/A	Structural & strategic family therapy	Baruch et al.[56]	No			d=.73**		Post
Stop Now And Plan	*www.oslc.org*	PE	Behavioural	van Loon et al.[57]	No			d=.64**		*3-6*[e]
Triple-P	*www.triplep.net*	PE	SLT	Leung et al.[50]	No	d=.53**[h]	d=.49**[h]			*Post*
Behavioural Parent Training	*Article Plus in www.jaacap.com*	PE	SLT and coercive parenting	van den Hoofdakker et al.[55]	Yes			d=.49**[h]		Post, *6*[f]

Note: [a] Probably Efficacious (PE) or Well Established (WE) Evidence Based Treatment according to Eyberg et al.[9]
[b] Cohen's d effect size; *small (.1.5-.4), **medium (.4-7.5), ***large (>.75). Bold indicates subscale entered for forest plot.
[c] DPICS-R reported ES d=.33 for free play; d=.44** clean up; d=.55** home visit
[d] ES reported for PT only, mother report. ES reported using father ECBI-P d=.75*** and ECBI-I d=.80***
[e] Indicated follow up period for reported ES *italicised* where [f]=post baseline, [g]=post-treatment
[h] calculated from means and SD or retrieved from companion paper. NR insufficient data to report

Table 1.5: Primary outcome measures of child behaviour

Measure	Details of measure	[h]Study	Reliability (Internal Consistency and Test-Retest)
Achenbach Child Behaviour Checklist (CBCL)[38]	118 items rated on a 3-point scale; 5 subscales of dysfunction; anxious/depressed, somatic complaints, withdrawn, social problems, attention problems, delinquent and aggressive behavior that yield two internalizing and externalizing dimensions and a total problem score. Clinical cut off score 60.	1[d] PRF	
		2[d] PRF, TRF	
		5[d] PRF	
		7 TRF (aggression scale)	IC α = .94
Parent Report Form (PRF) and Teacher Report Form (TRF)		9[d] PRF	
		10[def] PRF	
		11[d] PRF	
Eyberg Child Behavior Inventory (ECBI)[37]	36-items rated on two scales; a 7-point Intensity scale and a Yes/No response Problem Scale. The Intensity scale aims to establish how often the behavior occurs. The Problem scale identifies whether the parent currently perceives particular behaviours to be a problem.	1[a]	IC α = .98; T-R r = .86
		3[bc]	
		4[bc]	
		5[c]	IC α = .91
		6[bc]	IC r = .98; T-R r = .86
		7[c]	IC α = .84
		8[b]	
		12[b]	IC α = .98; T-R α = .86
Dyadic Parent-Child Coding System-Revised (DPICS-R)[39]	Observational measure to evaluate conduct problems among children and their parents at home. Parent-child dyads recorded in home setting and coded; 39 behavioural categories for parent; 8 for children.	1[g]	IC α = .63, .55, .66
		3	
		6	
		7	
		8	Kappa .91
		12	Kappa .91
Forehand & McMahon[72] observational procedure	Parent-child dyads participate in child-chosen activities, parent-chosen activities and a clean-up period.	5	
Pre-School Behaviour Questionnaire (PBQ)[73]	30 items addressing conduct problems in 4-6 yrs completed by day care teachers.	7 (aggression scale)	IC α = .80

Note: [a-g]Subscale used: [a]ECBI Total score; [b]ECBI Problem; [c]ECBI Intensity; [d]CBCL-Ext; [e]CBCL-Int; [f]CBCL-Total; [g]DPICS-R – Total deviance
[h]Study: 1=Beauchaine et al.[47]; 2=Hemphill & Littlefield[49]; 3=Gardner et al.[49]; 4= Leung et al.[50]; 5= Lavigne et al.[51]; 6=Eames et al.[52]; 7= Fossum et al.[53]; 8= Gardner et al.[54]; 9= van den Hoofdakker et al.[55]; 10= Baruch et al.[56]; 11= van Loon et al.[57]; 12= Hutchings et al.[58].

Table 1.6: Indirect effects explored

Study	TBS[b]	Statistical analysis	IE[a]	Variables explored	Significant variables	Key findings
Beauchaine et al.[47]	No	Latent Growth Curve Models	*/**	**1) Parenting Stress**[74] **2) Relationship satisfaction**[75] **3) Parent Mood**[76] **4) Parental substance abuse** **5) Family demographic variables** (maternal education, maternal age, maternal relationship status, social class, family size, marital satisfaction) **6) Co-morbid child psychopathology**[38]	* 5 & some 7 Baseline 8 ** 5 various 6 ***	Marital adjustment, maternal depression, parent substance misuse, and child co-morbidity moderated treatment response. Negative parenting predicted and mediated outcome. Both baseline parenting and improvements in parenting were required for maximum change.
			*/***	**7) Child demographic variables:** (age, gender) **8) Parenting**[39,77] **9) Tx Dosage** (Sessions attended and treatment components)	8 & 9	
Hemphill & Littlefield[48]	No	Hierarchical regression analysis	*	**1) Pre- Tx problem behavior**[38] **2) Pre-Tx parent-child interaction**[78] **3) Parent functioning**[79] **4) Mood**[76] **5) Relationship satisfaction**[75] **6) Family Adversity**	1 & 2	Higher preceding levels of behaviour and attention problems predicted most change at home and school. The combination of variables included in the analyses accounted for 26% of variance in outcome.
Gardner et al. [49]	No	Hierarchical multiple regression	***	**1) Parenting**[80] **2) Parent Sense of Competence**[81] **3) Maternal mood**[76]	1	Change in positive parenting skill partially mediated outcome; change in parent mood or sense of competence did not. Skill change may be the most salient ingredient.
Leung et al.[50]	Part	Hierarchical multiple regression	*	**1) Socio-demographic variables** (child age, gender, family income, marital status, new immigrant status) **2) Service type** **3) Reason for referral** (Child behavior problems, parenting problems, psychosocial difficulties)	1 (income, immigrant status) , 4, 5, 6, 8	High levels of parenting stress, lower household income, and new immigrant families who completed the programme were significant predictors of greater improvements. The addition of pre-intervention behavior, competence stress and

				4) Parent self efficacy[81] **5) Parenting stress**[74] **6) Parent mood**[82] **7) Family demographics** **8) Programme completion** (75% attendance)		mood improved variance.
Lavigne et al.[51]	Part	Linear mixed modelling	*/**	**1) Family demographic variables**[83] **2) Parenting stress**[74] **3) Parent mood**[76] **4) Parental distress**[74] **5) Parent-Child interaction**[72] **6) Child co-morbid condition** **7) Child temperament**[84]	* 1, 4, 6, 7 ** 1 (gender, maternal education)	More initial life stress, parenting distress, internalising problems, functional impairment and difficult temperament predicted change, but lower scores on these predicted fewer behavioural problems post-treatment. Gender was a significant moderator, with more improvement for girls than boys. Less well educated mothers showed the greatest change.
Eames et al.[52]	Yes	Stepwise regressions analysis	*	**1) Leader skill**[66] **2) Parenting**[81,39]	1 & 2	Observed and reported parenting change predicted outcome. Leader skill was a significant predictor of parent change, influencing child behavior indirectly.
Fossum et al.[53]	No	Logistic regression analyses	* ***	**1) Child psychopathology**[85] **2) Parenting stress**[74] **3) Parental mood**[76] **4) Parenting**[86]	* 1, 2 *** 4	High levels of maternal stress, ADHD and being a girl predicted poorer outcome at home, while pre-treatment levels of ADHD predicted a poorer outcome at school. Contrary to other findings, positive parenting did not. Change in harsh discipline partially mediated outcome.
Gardner et al.[54]	Yes	Multiple regression	** ***	**1) Family demographic variables**[87,76] **2) Child demographic variables** (age, gender, pre-tx levels of problem behaviour) **3) Parenting behaviour**[39] **4) Parental mood**[76]	** 2 (gender, age) *** 4	Child gender and age were significant moderators; the treatment produced better outcomes for boys, and younger children. Children of more depressed mothers improved more.

van den Hoofdakker et al.[55]	Yes	Linear Multiple Regression Analyses	*/**	**1) Child co-morbidity** **2) Child IQ, age** **3) Parent ADHD**[88] **4) Parent mood**[89] **5) Parent self efficacy**[74]	* 1 ** 5	Children with no or single type co-morbidity responded more favourably. Maternal parenting self-efficacy moderated treatment response.
Baruch et al.[56]	No	Binary Logistic regression	*	**1) Child variables**[90,39]	1 (withdrawn subscale)	CBCl-withdrawn subscale only significant independent predictor of reliable change. The higher the score pre-treatment, the greater improvements in post-treatment scores.
van Loon et al. [57]	Yes	Linear regression model	*	**1) Parent mood**[76]	1	Children of non-depressed mothers improved significantly more using clinical depression status, but improvement of maternal depression status did not have a significant effect on outcome.
Hutchings et al.[58]	Yes	Regression analyses	***	**1) Maternal mood**[76] **2) Parenting**[39]	1	Improvement in maternal depression was a significant partial mediator Parenting interventions are more likely to result in improved behaviour when they also address the skills deficits known to be associated with maternal depression.

Note: Putative Indirect Effect (IE) - Predictor* Moderator** Mediator***

1.5.3 Discussion

1.5.3.1 Conclusions

Previous meta-analyses identified that family adversity such as maternal depression and low income increase the risk of poorer treatment gains. Hypotheses involving parenting stress, mood, competence and style have remained popular, alongside child demographics. Neither category contributes significant new information, either because they are already well established, or cannot be targeted for change. Some novel delivery characteristics were explored, with limited generalisability beyond the specific service models. Although identification of any intervening variable is useful, the recent evidence base has been informed by studies selecting variables without firm, a priori rationale.

Studies have presented findings for the predictive role of pre-treatment problem behaviour, maternal mood, parenting style and parent-child interaction. Both RCTs and non RCTs identified baseline parenting stress as a significant predictor. There is further evidence that families with low household income do not benefit as much, with limited potential to translate this into clinical improvements. Child co-morbidity, gender and age, maternal mood, education and self-efficacy have been found to moderate outcomes. However, some studies reportedly studied self-efficacy, while using a measure of competence[50]. De Montigny & Lacharité[91] cautioned that parenting self-efficacy is conceptually distinct from competence and confidence, but are often used interchangeably. That changes in positive or negative parenting and maternal mood are possible mechanisms of change that mediate outcome is further reinforced. Despite significant findings for these key variables, a large amount of variance remains unaccounted for in nearly ten further years of research. Farmer et al.[92] explained a lack of significant findings for twenty-one potential predictors and moderators as disappointing scientifically, but encouraging clinically, as it suggests that PT is inclusive for all families. Alternatively, researchers are not designing primary studies with sufficient attention to valid measures, sample size and robust statistical techniques to find effects where they do exist.

It is encouraging that researchers have answered the call for studies in real world settings, reporting on a range of fidelity measures. Although internal validity was once viewed as the most essential aspect of treatment research, the need to balance internal and external validity is now viewed more importantly to ensure evidence-based practice and practice-based evidence informs understanding[44]. Moderate to large effect sizes suggest that PT is being delivered across different settings in an effective way. Valid and reliable outcome measures are being used, however different findings are presented depending on the subjective or objective reporting of outcomes.

To have an evidence base so heavily influenced by the same population of 392 participants is risky if any source of bias has been unrecognised or unreported. It is important to note that the parents in the initial study drawn on heavily for re-analysis were predominantly Welsh-speaking, and may have had the programme content delivered with different cultural sensitivities in mind. This may restrict the dissemination of results more widely, and needs to be acknowledged if it is particularly dominant in reviews of this kind. Kazdin[93] cautioned that researchers should use suitable methodological and statistical methods to address association, consistency, gradient, timeline and coherence necessary for uncovering key processes of change. By assessing predictor and outcome variables at the same time, few studies were designed to enable temporal precedence to be established. To encourage standardisation, and improve the quality of mediation research in behavioural sciences, Preacher and Hayes[26,94] have advocated the use of certain statistical models, and disseminated these widely. The publication of their articles coincided with the start of the search range, and earlier mediation studies employed the popular causal steps approach. However, there is evidence that the same research teams had acknowledged these improvements and employed them in more recent studies[49,58].

Limitations of the studies include that only seventy-six participants in the review sample of 2094 participated in a primary RCT [49]. While the practice of re-analysing trial data seems an efficient way of advancing the evidence base, it is not without its

flaws. Variables are limited to those for which measures have been administered, resulting in popular variables being over-researched at the expense of unique and potentially informative ones. Estimated sample sizes for the original trial were rare, and may have lacked sufficient power to detect moderated or mediated effects. Sample sizes for common mediation models are available and should be reported even if numbers are not achieved[63]. The limited analysis of moderators relative to predictors has been criticised[22], however, five studies limited their design to predictor analyses. Child variables were generally restricted to demographic characteristics, although more interesting individual differences may exist. The critical appraisal process highlighted that the reporting of effect sizes, or figures to calculate them is mixed. Studies reported significant findings in different ways; the description of which variables were entered into regressions was mixed, and Adjusted R squared values for effect sizes were rare. Although these can be calculated, this requires the accurate reporting of predictors to enter into the equation. No studies reported the rates of participants who had previously attended PT, which may have been a confounding variable if they had previously been exposed to the programme content, or developed negative attributions about the potential for change.

This review is limited in a number of ways. This review combined studies that delivered PT to families with children aged 2-17 years. While aspects of positive parenting translate across all ages, there will be specific demands relating to child and adolescent development that require different skills. Studies were included regardless of the combination of intervention modules, resulting in a sample that received various combinations of PT, CT and TT. This makes direct comparison more difficult and further complicates which aspects of an intervention package might be the most active ingredient[36]. Only four of the twenty-three UNODC[10] recommended PT are present in the review. Participants in seven (58.3%) studies attended Incredible Years programmes, and there is a relative lack of Triple-P studies, the most highly rated PT[9,10,18]. This may indicate that key studies have not been captured by the search terms, the databases were too limited, or studies published during the review process were not notified through RSS feed.

Aspects of the search strategy may have introduced bias into the final selection. Excluding non-English language articles may have limited findings from culturally diverse populations, although a recent article suggests that research in developing countries is in its infancy[95]. Excluding studies delivering evidence-based PT on an individual basis rejected a number of potentially informative studies. This included different populations such as foster carers[96], ADHD[97] and different settings[98]. Searching for articles from 2004 resulted in a quarter of the selected studies being published before the meta-analyses on which the review builds, limiting conclusions about whether they had responded to the calls for research.

There are research implications from the findings. Potentially critical mechanisms of change that have received attention in the adult literature, such as therapeutic alliance or group processes[99] are missing in the child and adolescent literature. Secondary analyses should be used with caution, however, the potential for intervention trials to be re-analysed should be included in ethics applications to allow more informative child variables to be explored. Authors should report the period of time after the primary trial to ensure that any programme or cohort factors that have changed in the intervening period are transparent. The associations and interactions between moderators and mediators can be explored in more complicated models[100,101]. Increasing the use of path diagrams to demonstrate hypotheses will protect the evidence base from drawing inaccurate conclusions. The absence of mediation analyses in non-RCTs suggests that there are barriers to overcome to ensure that the studies more likely to inform policy and practice are equally sophisticated in their design. Non-RCT studies in existing services are also less likely to gather data from multiple sources, for valid reasons relating to the cost and resources that independent observations require. The majority of studies acknowledge this limitation, but an acceptable alternative to costly independent, blind observation needs to be explored.

Clinically, the inclusion of participant satisfaction measures in PT would indicate whether the adherence to fidelity on which the success of the PT are based comes at the expense of acceptability to those attending. Current delivery of PT across a variety of settings suggests that they are inclusive in their design, as moderate to

large effect sizes are reported. However, while so much variance in outcome remains unaccounted for, the families who need PT the most may continue to disengage or achieve less impressive outcomes.

1.6 References

* references marked with an asterisk represent studies included in the review.

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Chapter 2: Bridging chapter

2.1 Why parenting matters

Advances in neuro-imaging techniques have improved our understanding of brain development which is immature at birth, undergoes rapid cortical growth in the first 18 months, and matures into higher order functions through adolescence into the early 20s. The strengthening and 'pruning' of pathways is shaped by internal and external factors, as demonstrated in the underdeveloped orbito-frontal regions of Romanian orphans resulting from chronic neglect and social deprivation (Chugani *et al.* 2001). Behavioural, social, emotional, and cognitive skills which are emerging or undeveloped are vulnerable to disruption during this process, with potentially long term consequences. Subsequently, the significance of the child and adolescent years as critical developmental stages is increasingly recognised in local, national and global strategies.

A decade ago the World Health Organisation (WHO; 2002, p.1) stressed that, "the future of human societies depends on children being able to achieve their optimal physical growth and psychological development. Never before has there been so much knowledge to assist families and societies in their desire to raise children to meet their potential". Similar evidence linking the early years and a range of health outcomes was acknowledged by Scotland's Chief Medical Officer in an annual review of the Scottish Executive Early Years Framework (2006). The report emphasised the importance of parent-child interaction for physical and mental health development. The UN Convention on the Rights of the Child (UNCRC) also states that parties to the convention should maximise child development and wellbeing, and has identified positive parenting as a basic human right. As such, families living in impoverished environments that threaten positive parenting have a right to be assisted with their parenting skills. However, a further WHO report (WHO; 2007, p.3) recognised that there are situations where "parents and carers cannot provide strong nurturant environments without help from local, regional, and international agencies".

2.2 Social, economic and political background

UK child well-being is currently the lowest in the industrialised world, with mental health and behaviour indicators comparative with 30 years ago (Bradshaw *et al*. 2007; Collishaw *et al*. 2004; Maughan *et al*. 2008). Early years strategies are informed by studies that indicate between 7% and 35% of young children meet the diagnosis for Oppositional Defiant Disorder (ODD) or Conduct Disorder (CD) (Gross *et al*. 1995; Hawkins *et al*. 1999), with estimates of 20% in the UK population (Attride-Stirling *et al.* 2000). Prevalence rates are complicated by different symptom checklists in the Diagnostic and Statistical Manual of Mental Disorders-IV-Revised (DSM-IV-R, 2000) and International Classification of Diseases (ICD-10, 2010), and many more children display disruptive behaviour without receiving a formal diagnosis. Combined lifetime costs to justice, education, health and social services are approximately ten times higher in children with conduct disorder (Knapp *et al*. 1999; Scott *et al*. 2001a). Knapp *et al*. (1999) estimated that children with CD cost an additional £15,282 a year on average (range £5411- £40,896). The burden of this cost is borne by families (31%), education (31%), NHS (16%), state benefits (15%), social services (6%) and the voluntary sector (1%).

A number of child, parent and contextual risk factors contribute to the development of externalising behaviour problems. However, the quality of parenting a child receives is the strongest modifiable risk factor. Several evidence-based Parent Skills Training (PT) programmes have met agreed quality standards through robust and replicated randomised controlled trials (Brestan & Eyberg, 1998; Flay *et al*. 2005). Figure 2.1 shows the United Nations Office on Drugs and Crime (UNODC, 2010) list, ranked on the number of RCTs demonstrating their success. The UK Department of Health, National Service Framework (2004) recommends greater use of parenting interventions for preventing youth violence and conduct disorder. The National Institute of Clinical Excellence (NICE) also supports their use for children aged 3 to 10 years (NICE CG158, 2006), and for the treatment, management and prevention of antisocial personality disorder for 12 to 17 year olds with conduct problems (NICE CG77, 2009). In addition, NICE appraisal on conduct disorder in children also states that programmes should be both clinically effective and cost

Figure 2.1 UNODC recommended PT

1. Triple P – Positive Parenting Programme
2. The Incredible Years (IY)
3. Strengthening Families Program
4. Parents as Teachers
5. Stop Now and Plan (SNAP)
6. Multisystemic Therapy (MST)
7. Parent-Child Interaction Therapy
8. First Step to Success
9. Guiding Good Choices
10. Parenting Wisely
11. Families and Schools Together (FAST)
12. Staying Connected with your Teen
13. Helping the Non-compliant Child
14. Positive Action
15. Family Matters
16. Strengthening Families Programme for Parents and Youth 10-14
17. Multidimensional Family Therapy
18. Nurse-Family Partnership
19. Families Facing the Future
20. Parents Under Pressure
21. Al's Pals: Kids Making Healthy Choices
22. Resilient Families
23. DARE to be You

effective. Advances in health economics models have allowed comparison of PT programme costs and public sector expenditure according to the severity of problem behaviour and degree of change. Edwards *et al*. (2007) conducted a full cost-effectiveness analysis of the costs to establish and maintain the Incredible Years PT (IY; Webster-Stratton & Hammond, 1990). On the basis of recurrent running costs (including training, travel, clerical support, supervision, crèche and refreshments) the mean cost per child with 8 families in the group was estimated at £1595.46, reducing to £1063.64 with 12 families. At a ceiling cost of £100 per one point improvement on the outcome measure, the intervention was 83.9% likely to be cost effective, becoming more so with problem severity.

With concern about increasing rates of antisocial behaviour, there is an emerging political consensus about the value of these programmes (Welshman, 2010). During recession, financial difficulties and increased pressures pose additional demands on family functioning, particularly in those with existing challenges. Therefore, in such times, there is particular need for the widespread implementation of PT (Layard & Dunn, 2009). Given the climate of decreasing resources and increasing demands on public health services, a key policy question is how services can deliver effective, accessible and efficient parenting interventions. A positive economic return from early years' investment can offer long term savings for health, social care, voluntary

and educational services with significant cost savings realised by the health service (Bywater *et al*. 2009).

2.3 The local context

However, PT programmes do not always meet the needs of 'hard to reach' families as few local authorities adopt them, or implement them at scale (BPS, 2012; Bumbarger & Perkins, 2008; Flanagan & Hancock, 2010). Recent years have seen Scotland embark on a major programme of activity designed to improve outcomes for children and young people. Key drivers for change include the Scottish Government's National Parenting Strategy (2012) which includes parenting support as one of its commitments to Scotland's families. The strategy emphasises the intentions of the Early Years taskforce to explore a national roll-out of evidence-based parenting programmes on a population basis. Since 2010 the Psychology Directorate has forwarded the implementation of the Psychology of Parenting Project (PoPP), which aims to increase the availability of PT for families with young children who display elevated levels of behaviour problems. Examination of current practice identified that, at local level, there is often a range of barriers to the delivery of PT in real world settings. However, even the most successful interventions, designed to reduce barriers to change, are effective for only about two thirds of families (Webster-Stratton & Hammond, 1990).

2.4 Calls for research

The desire to reinforce the success of PT through further replication studies with different populations and settings has resulted in ever more treatments being designed (Eyberg *et al*. 2008). The need to move on from efficacy trials about 'what works?' to explore 'for whom and how does this work?' is recognised as the next wave of research (Rutter, 2005; Weersing & Weisz, 2002). These questions are informed through studies modelling potential relationships between predictor, moderator and mediator variables and treatment outcome. Studies of this kind test hypotheses, advance theory and identify possible points of intervention for clinical practice. However, since Rozeboom (1956) advanced a linear, additive and complete definition of mediation, debate has continued about how best to define and

operationalise the terms (Baron & Kenny, 1986; Holmbeck, 1997; James & Brett, 1984) and statistical models (Mackinnon *et al*. 2002; Preacher & Hayes, 2008).

Predictors are baseline variables, which may be associated with better or worse outcome equally across treatment and control groups, or tested within the treatment group only (see Kazdin, 2007). The discovery of predictors may highlight masked treatment effects and maximise power in future trials, although clinically, they are often less accessible targets for change (e.g. age or gender). Moderator variables precede treatment and modify treatment effects, but the direction or strength of the effect differs across treatments (Baron & Kelly, 1986). As variables on which the intervention effects are conditional, they identify for whom and under what circumstances treatments exert different effects. Moderation is defined as a statistical interaction between a baseline characteristic and intervention effect (Kraemer *et al*. 2002). Clinically, moderator analyses help to identify those individuals who might be most responsive to treatment and those who might benefit from other treatments (Nock, 2003). Mediators are intermediate variables that occur during treatment, account for the association between treatment and outcome, and specify how or why treatment effects occur. While moderators are baseline values, mediators are typically individual processes (e.g., abilities or functioning) that change during treatment. Accordingly, mediators identify possible mechanisms through which change occurs and may be causal links between treatment and outcome (Kraemer *et al*. 2002).

2.5 Selection of variables

The search for key parent, child or programme characteristics that have a direct or indirect influence on outcome is relatively recent. Excluding plausible variables strengthens the case for remaining ones, and their selection should be guided by theory or other empirical data to avoid arbitrary mediators contributing little to our understanding (Johansson & Høglend, 2007; Rueter *et al*. 1999). Attempts should also be made to select variables with unique constructs and minimal conceptual overlap to reduce collinearity. The selection of three variables in this study was

guided by the theoretical model underpinning evidence-based PT, the therapeutic relationship through which this process is explored, and previous literature.

2.5.1 Cognitive Social Learning Theory

The theoretical model underpinning the IY parenting programme is a collaborative approach to Bandura's (1982) cognitive social learning model (Webster-Stratton & Herbert, 1993). Social learning theory (SLT), provides a social framework for human learning via observation, imitation and modelling of others, and the reinforcement of those actions. Observational learning occurs through the processes of attention, retention, reproduction and motivation to imitate the observed behaviour. Subsequently, learning takes place in the context of an individual's behaviour, environment and personal qualities (Figure 2.2). In PT, parents are taught that moment-to-moment exchanges are crucial; if a child receives an immediate reward for their behaviour they are more likely to do the behaviour again, whereas if they are ignored or punished, they are less likely to do it.

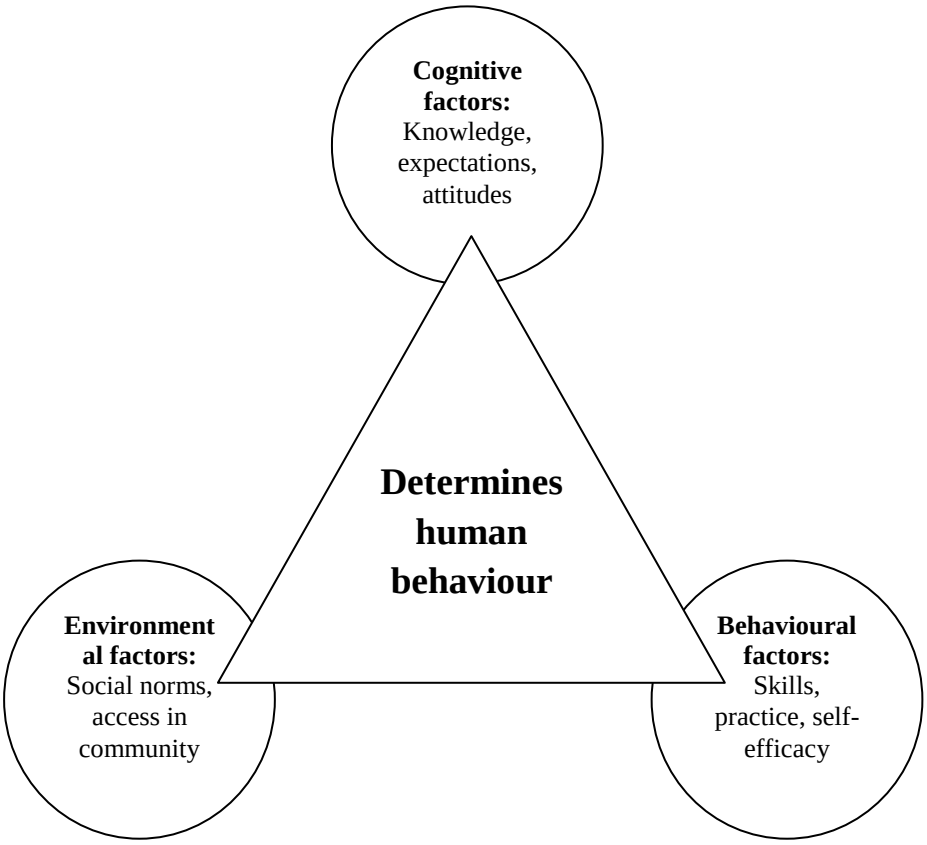

Figure 2.2: Adapted from Bandura's Social Learning Theory

The selected variables are further supported by proposals made by Sanders and Morawska (2005) to account for the lack of progress that some parents make in PT. They emphasised that future research should build on existing knowledge about how parents acquire and maintain focused parenting skills through modelling and practise to explore how (a) dysfunctional *attributions or beliefs* about children's behaviour are changed, (b) positive expectancies and *parenting self-efficacy* are increased, (c) social supports are activated, and (d) parents learn to *regulate distressing affect* that interferes with effective parenting. In addition, qualitative studies have concluded that the learning process during an IY programme is one in which parents gain knowledge, control, and competence to cope effectively with the challenges of having a child with conduct problems (Spitzer *et al.* 1991; Webster-Stratton & Herbert, 1993). Taking all these considerations into account, the following parent variables were selected:

2.5.2 Rationale for parenting self-efficacy

In the late 1970s Bandura introduced the concept of self-efficacy, from which perceived self-efficacy was derived; defined as, 'beliefs one holds in one's capabilities to organise and execute the courses of actions required to produce given attainments' (Bandura, 1997, p.3). Perceived self-efficacy is developed through role modelling, experiential learning and performance mastery, and positioned as a mediating variable between knowledge and the acquisition and maintenance of new behaviours. These beliefs influence individual decision making, the amount of investment in specific activities, and maintenance of effort in the face of adversity. Individuals with low perceived self-efficacy tend to give up on challenging tasks prematurely, internalise failure, and may experience pronounced anxiety, depression and self blame. Individuals with higher levels of self-efficacy tend to persist in a given task until they succeed (Stretcher *et al.* 1986).

Bandura (1997) noted that efficacy beliefs are a major base for parental practices. Parenting self-efficacy (PSE) refers to parents' beliefs in their ability to manage the varied tasks and situations of parenthood, which directly affects the quality of

caregiving (Teti & Gelfand, 1991). However, confusion about the definition and measurement of PSE has lead researchers to conclude that the appropriate investigation of the concept is relatively recent. For example, de Montigny & Lacharité, (2005) cautioned that although it is conceptually distinct from parenting competence and confidence, they are often used interchangeably in the literature. Whilst PSE is concerned with what one believes one can do in a variety of circumstances, parental competence is concerned with the number of skills one possesses. Building on Bandura's definitions, they concluded that PSE should be defined as, "beliefs or judgements a parent holds of their capabilities to organize and execute a set of tasks related to parenting a child" (2005, p.387).

Knowledge of appropriate parenting behaviours and confidence in one's ability to effectively implement them is a determinant of discipline style, across all ethnic groups (Hill & Bush, 2001; Sanders & Wooley, 2005). Parents who lack a sense of self-efficacy in their ability to parent may feel more overwhelmed by their parental duties, unable to put parenting knowledge into action, experience high levels of emotional arousal, and lack persistence with positive parenting strategies. This can result in poor outcomes for child behaviour and development (Coleman & Karraker, 2003). Parents with higher perceived self efficacy tend to experience positive mental health and a sense of personal empowerment, which makes parenting tasks less taxing and more satisfying (Bohlin & Hagekull, 1987; Kwok & Wong, 2000). High maternal self-efficacy has been linked with competent, sensitive and warm parenting practices which protects against the development of conduct problems and promotes wellbeing. Parents with low PSE tend to report more child behaviour problems and use more severe aversive discipline techniques (Coleman & Karraker, 1998; Teti & Gelfand, 1991). Webster-Stratton and colleagues suggest that a collaborative model which gives parents responsibility for developing solutions alongside the group leaders is more likely to increase parents' sense of confidence, and perceived self-efficacy in treatment. The techniques adopted within SLT-based PT programmes may help to shift self-efficacy by providing an environment where skill acquisition in the group setting can be transferred to the home environment. Bloomfield & Kendall (2007) found a significant increase in the self-efficacy scores of parents from

attending a range of parenting programmes that was maintained at 4-month follow-up.

PSE is a promising area of research to resolve individual differences in parenting styles. Data from longitudinal studies suggests that these beliefs are relatively stable over time, but may differ between mothers and fathers (Gross & Tucker, 1995), and in response to contextual factors such as social support and employment demands (Bogenschneider *et al*. 1997). Maternal efficacy beliefs have been found to be a mediator between various psychosocial variables, including depression, social support and infant temperament on parenting behaviours (Coleman & Karraker, 2000; Cutrona & Troutman, 1986). PSE has been a popular candidate variable, recently explored as a potential predictor (Hoza *et al*. 2000; Leung *et al*. 2006; Tucker *et al*. 1998) mediator (Gardner *et al*. 2006; Miller-Heyl *et al*. 1998; Spoth *et al*. 1995), and moderator (van den Hoofdakker *et al*. 2010) with mixed results due to the heterogeneity in its definition and measurement.

2.5.3 Rationale for parenting attributions

Individuals form beliefs or 'attributions' about the events around them to better predict, understand and respond to the social environment. Ultimately, these causal explanations act as mediators between antecedent events and emotional and behavioural reactions (Lazarus, 2001). Weiner (1990) developed a taxonomy based on the dimensions of locus (internal-external), stability (stable-unstable), and globality (global-specific). These can be broadly defined as 'causality' or 'responsibility' dimensions. Where causal attributions explain why an event occurred, responsibility attributions concern an individual's accountability for having caused the event (Bradbury & Fincham, 1990). Attributions are key components of psychological models; for example, the theory of learned helplessness (Abramson *et al*. 1978) indicates that individuals whose self-causal attributions for negative events tend to be internal, stable, and global are more likely to experience reduced self-esteem, helplessness and ultimately depression than individuals who attribute similar events to external, unstable, and specific causes.

There is increasing recognition that the ways in which parents interpret child behaviours influences whether these behaviours are labelled as problematic, the affective response, and choice of discipline (Dix *et al*. 1986; Slep & O'Leary, 1998). In general, parents of aggressive children are likely to attribute their children's misbehaviour to more dispositional, intentional and stable causes compared to parents of non-problem children. Conversely, when the child does demonstrate pockets of good behaviour, the parent is more likely to dismiss these as transient, external and specific (Johnston & Freeman, 1997; Sanders & Morawska, 2005). When a child's behaviour challenges or threatens a parent, their causal explanations for the misbehaviour determines how they feel, which in turn influences their disciplinary approach and the long-term quality of parent-child interactions (Power *et al*. 1990). Leung and Slep (2006) found a link between dysfunctional attributions and ineffective discipline strategies, particularly in parents with depressive symptoms. In their large sample, parent causal attributions predicted lax parenting and child responsible attributions predicted over-reactive discipline styles.

While dysfunctional attributions may limit a parents' capacity to calmly parent a child, they may also influence help seeking, engagement and outcome in PT (Morrissey-Kane & Prinz, 1999). Individuals who "own" problems are more likely to recognise their role as an agent of change and persist in the face of difficulties. However, parents who locate the behaviour problems within the child may struggle to accept a skill based PT requiring change to their own disciplinary practices. Where a clear understanding of the techniques is not translated into skill acquisition, it is possible that dysfunctional attributions are preventing changes in parenting style. Spitzer *et al*. (1991) identified that parents are initially preoccupied with who is to blame for their child's problems; whereas some parents externalised the problem and blamed their child's personality, an absent parent, teachers or society, other parents internalised the child's problems and attributed them to their own personal inadequacies and poor parenting. Identifying parents for whom this is problematic is necessary to overcome barriers to change. To date, there are no known studies that have explored the effect of parental attributions on outcome, making it a worthy candidate for inclusion.

2.5.4 Rationale for parent attachment style

The ways in which parents engage with the collaborative nature of a group-based PT will be influenced by their attachment style. Attachment theory (Bowlby, 1969; 1982) provides a model for understanding how attachment styles formed in infancy shape the working models and mental representations of self and others in close adult relationships. The way individuals perceive and relate to their interpersonal environment reinforces these working models until they become internalised personality characteristics that are relatively stable across the life span (Scharfe & Bartholomew, 1994). Ainsworth *et al*. (1978) categorised three infant attachment styles on the basis of infant's response to separation from caregivers as secure, avoidant, resistant. Building on this, Hazan and Shaver (1987) hypothesised that working models of attachment established in infancy would remain relatively stable across the life span and manifest in adult romantic relationships. Adult attachment styles describe an individual's fear of rejection, yearning for intimacy, and preference for independence in close relationships.

If attachment figures are not available or supportive, and negative working models of self and others are formed, alternative strategies to proximity seeking for affect regulation are activated. These strategies are conceptualised in terms of avoidant and anxious dimensions, collectively called 'insecure'. Anxious attachment styles are characterised by a lack of confidence in the responsiveness of attachment figures, fear of abandonment and rejection and the drive to seek closeness and reassurance. Avoidant attachments are characterised by an over emphasis on self reliance and discomfort with emotional or physical closeness. Individuals with avoidant styles distrust close relationships, are uncomfortable with emotional or physical closeness, and strive to be behaviourally and emotionally independent from others (Mallinckdrodt, 2000). Bartholomew and Horowitz (1991) expanded this model to define the attachment styles on models of self and others, and divide the avoidant category into dismissing (positive models of self and others) and fearful (negative models of self and others) styles. The secure style was defined as representing positive models of self and others, and the preoccupied styles was defined as

representing a negative model of self while maintaining a positive model of others, as depicted in Figure 2.3.

Figure 2.3: Four-category attachment typology developed by Bartholomew and Horowitz (1991)

		Models of Others	
		Avoidance	
		Positive	Negative
		Low	*High*
Models of Self	Positive	*Secure*	*Dismissing*
Anxiety	*Low*		
	Negative	*Preoccupied*	*Fearful*
	High		

Attachment theory would better explain how a parent protects their child against harm and provides a 'secure base' for exploration, than the behavioural consequences of rewards and punishment on which SLT is based. If a caregiver cannot be relied upon to respond to them in times of need, a child may display various maladaptive behaviour patterns towards them, including avoidant, disorganised or disturbed behaviour. Spousal pairings differing in attachment styles might prove problematic if this translates to inconsistent parenting (Volling *et al.* 1998), but few studies have addressed how adult attachment styles in couples with children might affect their models of parenting.

The role of attachment in PT outcome has not been considered until recently. Scott and Dadds (2009) suggest that attachment theory may help to explain why positive attention fails to be rewarding for some children. While they do not advocate attachment based interventions for behaviour problems, they argue that there are aspects of attachment ideas that can add value to SLT-based treatments. For example, SLT based PT does not assess which parenting behaviours are rewarding and punishing for individuals; therefore its techniques may not work for families for whom the reward strategies (e.g. descriptive praise, behaviour charts) are 'attachment

neutral' and the new discipline techniques are 'attachment rich'. The use of rewards in these families may be materialistic and boring and contain little by way of the things that make people want to spend time together, encouraging programme drop out and multiple referrals. However, time out is potentially infused with attachment-rich behaviours (e.g. hostility, rejection, ambivalence) that are highly salient and threatening to the child (Dadds & Hawes, 2006).

An individual's attachment style influences his or her ability to join, participate and benefit from a therapeutic intervention and attachment theory provides a theoretical basis for the research finding that a good therapeutic alliance is the best predictor of good outcome (Holmes, 1997). Attachment patterns can predict the strength and quality of a therapeutic alliance (Byrd *et al*. 2010; Diener & Monroe, 2011). Parents with a more secure attachment may form more stable alliances and view the therapeutic relationship as a secure base from which to explore potentially anxiety-provoking issues (Connor, 2011; Obegi, 2008). Preoccupied parents may perceive themselves as victims and struggle to see they have power to control their own behaviours and adopt the techniques. Fearful parents are likely to be socially withdrawn and may appear oppositional and resistant to treatment. Dismissing clients may begin to deny that anything is wrong, describe their families in positive terms, and intellectualise their problems as a safety strategy.

The application of attachment theory to group psychotherapy is growing (Hammond & Marmarosh, 2011; Marmarosh *et al*. 2009; Mikulincer & Shaver, 2007). Schectman & Dvir (2006) suggested that secure group members who hold positive views of others and are comfortable with close relationships, are more likely to self-disclose and respond sensitively to disclosure by others. They may use the group as a source of comfort and support, and as a secure base for exploration and growth. People who are secure in their close relationships have more positive memories of group interactions, appraise group interactions in more challenging and less threatening terms, react to these interactions with more positive affect, and function well during team work (Rom & Mikulincer, 2003). Individuals high in attachment anxiety display problematic interpersonal behaviours in group therapy, such as non-

assertiveness, vindictiveness, and intrusiveness (Chen & Mallinckrodt, 2002). Individuals with avoidant styles who prefer to rely on themselves to manage stress are less likely to trust others or welcome being the recipient of such disclosure. Shorey and Snyder (2006) assert that attachment styles should be assessed as individual difference variables in psychotherapy outcome research because adult attachment styles dictate how people perceive and respond to their environments, and therefore how clients respond differentially to various treatments. Attachment was selected as a parenting variable due to growing interest in the application of attachment theory to the therapeutic process, the fact it has not been selected in any previous studies, and it has minimal conceptual overlap with attributions and self-efficacy.

In summary, there has been increasing interest in identifying predictors, moderators and mediators of outcome in the parenting literature so that pressured services can deliver PT interventions efficiently to those families most in need. Discovering what accounts for variance in outcome is of theoretical, clinical, social and economic importance. Refining the content and implementation of treatments would result in more effective and efficient PT interventions that yield larger effect sizes, or the same effect sizes at lower cost (Kraemer *et al.* 2002). However, the lack of progress in this area has been criticised. The majority of studies have used data from 'efficacy' trials conducted in specialist research clinics which maximise standardisation but are limited in their generalisability. There has been an increasing interest in 'effectiveness' trials conducted in real world settings to answer policy questions about whether parenting programmes can be rolled out into regular, services (Gardner *et al*. 2010). There remains an exhaustive list of potential parent, child and family variables that could influence treatment outcomes. Clinical psychologists are well placed to lead research in this area with the families most in need, an example of which is reported in the following chapters.

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2.7 Hypotheses

Main hypotheses

Do attachment style, parenting self-efficacy and parental attributions in parents attending parent skills training predict the severity of externalising child behaviour problems?

Do parenting self-efficacy and parenting attributions mediate or moderate the effect of attachment style on outcomes following PT?

Is the magnitude of change in child behaviour outcomes moderated by parent attachment style?

Specific hypotheses

1) Baseline levels of parenting self-efficacy and dysfunctional parental attributions will predict pre-treatment child behaviour problems.

2) Baseline avoidant attachment style will predict pre-treatment levels of child problem behaviour.

3) Increased levels of parenting self-efficacy and parent-causal attributions will mediate the effect of baseline attachment style on change in child behaviour outcomes.

4) The indirect effect of post-treatment parental attributions on post-treatment child behaviour is moderated by baseline attachment style because attachment style moderates the effect of self efficacy on child behaviour.

Chapter 3: Methodology

The validity of conclusions about mediation is equally dependent on research design as statistical criteria (Preacher & Hayes, 2004). In designing the present study, methodological considerations included the theory-based selection of candidate variables, how to maximise treatment fidelity, the selection of psychometric tools and how best to standardise their dissemination, power calculations for the analysis of indirect effects, and the sensitivities of conducting research in a clinical setting. Based on the amount of missing data they encountered in a meta-analytic review of the components associated with PT effectiveness, Wyatt-Kaminski *et al.* (2008) recommended that the following information is gathered when reporting PT evaluations:

- Basic demographic information.
- Details of intervention including content, delivery methods, setting, frequency and duration of sessions.
- Details of group facilitators' professional and programme-specific training.
- Details of treatment fidelity.
- Outcome measures information; including name, source, and procedure for data collection.
- Attrition information, including the number of participants who dropped out and how their data were handled in the analysis.

3.1 Design

The search for variables accounting for differential outcome has been explored through RCTs (Gardner *et al*. 2006), secondary analyses of primary RCTs (Fossum *et al*. 2009; Lavigne *et al*. 2008), non-RCTs (Hemphill & Littlefield, 2006) and meta-analyses (Lundahl *et al*. 2006; Reyno & McGrath, 2006). Schwartz *et al.* (1980) classified studies of interventions into two types; pragmatic trials test whether an intervention is efficacious, and explanatory trials examine how an intervention is efficacious. For the present study, a within-subject, pre-post explanatory design was adopted to test the relationships between three parent variables and child behaviour

outcomes following attendance at the Incredible Years (IY) parent skills training programme (Webster-Stratton, 1985). As the effectiveness of IY is well established in community settings, and the programme was delivered as part of regular services to families within a Child and Adolescent Mental Health Service (CAMHS), the study did not include a control group, as adopted previously (Leung *et al.* 2006). As recommended by Field (2009), independent variables will be described as 'predictors', 'moderators' or 'mediators' as appropriate, and the dependent variable as the 'outcome'.

3.2 Participants

Participants were parents and primary carers (including foster and kinship carers) requiring assistance for the management of child behaviour problems, and attending IY programmes within a Scottish health board. Recruitment was targeted at parents referred to a Tier 4 CAMHS day unit for 0-12 year olds. This was to ensure that the sample was representative of children with clinical levels of disruptive behaviour, and to optimise standardisation in the referral process, programme delivery and fidelity. The service model is designed to maximise attendance, retention and treatment gains; including concurrent Dinosaur School for the index child, keyworker input, multi-disciplinary review, transport and refreshments. To increase the sample size, parents attending IY in two additional Tier 3 outpatient settings were also invited to participate.

3.2.1 Inclusion and exclusion criteria

All parents and carergivers attending the identified IY groups were eligible. Multiple caregivers attending for the same child were recruited as individuals in recognition of their individual differences in parenting styles, interpretation of child behaviour, and engagement in the process. Individuals attending in a supportive capacity were excluded, e.g. voluntary sector advocates. Parents who consented to participate, but did not complete a full battery of pre-programme questionnaires within the first three sessions were excluded due to the confounding effects of receiving some treatment components before baseline assessment, possibility of passive non-consent, and risk to the therapeutic process of repeated requests.

3.3 Incredible Years Intervention

A treatment is deemed to be effective if it is found to be superior in the reduction of symptoms compared with a placebo, control, or alternative treatment; if it uses a comprehensive manualized approach, and if it is replicated by more than one research group (Chambless & Hollon, 1998). The IY series meets these criteria, and is supported by an extensive evidence base and inclusion in best practice guidelines (see Eyberg *et al*. 2008). The portfolio of available parent, child and teacher programmes are designed to reduce aggressive and problem behaviour, and increase social competence in children aged 0-8 years and 8-12 years. Groups of 8-12 parents attend a therapist-led, group-based programme over 12-sessions. Short vignettes which demonstrate social learning and child development principles are presented to generate focussed discussions and problem solving. Positive changes are mediated through a collaborative model in which group leaders help parents to achieve their identified goals through a 'pyramid' of positive parenting principles (Appendix 5.2). IY is the evidence-based programme of choice delivered locally, in which a substantial number of health professionals are trained. All participants received the school-aged programme for children aged 6-12 years, comprising of approximately twelve weekly sessions of two hours duration. Financial investment in IY by NHS Education Scotland (NES) has aimed to maximise treatment gains through adherence to key aspects of the treatment model, summarised in Table 3.1. overleaf.

Table 3.1: CAMHS implementation of IY parent programme

Objective	**Implementation**
Increase positive child behaviour through positive parenting	How to play with your child. Positive attention, encouragement and praise. Tangible rewards, incentives and celebrations. Limit setting. Ignoring. Time out to calm down. Natural and logical consequences. Teaching children to problem solve. Helping children to regulate their emotions.
Collaborative approach	Parent identified goals. Helping parents to identify social learning principles through vignettes and discussion. Learning positive behaviours through modelling. Skills practise through role play and home practice. Peer support and sharing of ideas with other parents.
Reduce barriers to attendance	Transport, refreshments, raffle incentives. Child attending concurrent Dinosaur school.
Treatment fidelity	Group leaders received 3 day training in IY. Current course materials available. Peer and self-evaluation after sessions. Session evaluation questionnaires completed by parents. Supervision provided by accredited group leader. Annual consultation with IY trainers from Seattle. Some group leaders working towards accreditation.

3.4 Measures

The parenting literature typically uses the Eyberg Child Behaviour Inventory (ECBI; Eyberg & Ross, 1978), Child Behaviour Check List (CBCL; Achenbach, 1991a) and Dyadic Parent-Child Coding System (DPICS-R; Robinson & Eyberg, 1981) as primary measures of child behaviour; albeit in different combinations, thresholds and subscales. Mixed methods of data collection such as subjective parent self-report and objective home or school observations are preferable to avoid reporting bias. However, Zeedyk (2002) cautioned that, while multi-source evaluations such as behavioural observations, staff ratings and psychological inventories may be more robust, they may interfere with the programme if participants find them intrusive or overwhelming. A lack of financial resources and formal training in home observation techniques precluded measures of this kind, and emphasis was placed on parent self-report using a battery of low cost, valid measures under thirty minutes' duration.

3.4.1 Measurement of Parenting Attributions

Parental attributions have been explored through written vignettes, parent recall of their own child's behaviour, or response to general statements (Bugental *et al.* 1998). Common measures include the Parent Attribution Test (PAT; Bugental *et al.* 1989) and Parental Style Attribution Questionnaire (PAQ; Sobol *et al*. 1989). Spontaneous attributions often differ to those generated from standardised assessments, particularly if the tool elicits rehearsed or impression managed responses. The few measures available have also been criticised for a lack of recognition that parents may attribute child misconduct to their own behaviour or characteristics, and that some of these parent-causal attributions may be dysfunctional. With this in mind, Snarr *et al.* (2009) designed a new measure to capture a broader range of potentially dysfunctional attributional qualities. The Parent Cognition Scale (PCS) specifically assesses for both dysfunctional child-responsible and parent-causal attributions for the recent misbehaviour of respondents' own children. The two types of parental cognitions are theoretically distinct; involving different loci (child vs parent), and dimensions (i.e. intentionality and hostility vs stability and globality). Both types of

attributions significantly predicted parental emotional problems, ineffective discipline, parent-child aggression and low parenting satisfaction in a large, representative community sample.

3.4.1.1 Parent Cognition Scale (PCS; Snarr *et al.* 2009).

The PCS is a 30-item self-report measure designed to assess two types of dysfunctional attributions for the recent misbehaviour of respondents' own children (Appendix 5.3). Respondents are asked to think about a target child's misbehaviour over the past two months and to rate various possible causes for their child's misbehaviour on a six-point Likert scale ranging from one (always true) to six (never true). Each item is reversed on scoring so that higher scores indicate greater endorsement. The scale yields two factors; child-responsible and parent-causal attributions. Nine items attribute misbehaviour to factors under the child's control, their wilful intent to misbehave and/or desire to have a negative effect on the parent (e.g., 'my child purposely tries to get me angry', 'my child likes to see how far he/she can push me'). Seven items attribute child misbehaviour to stable, global, trait-like characteristics of the responding parent (e.g., 'It's hard for me to set limits', I handle my child in a non-confident way'). The remaining items are distractor items that attribute misbehaviour to uncontrollable and/or unintentional child factors, or to unstable, specific, and situational parent factors. The original study reported that the basic factor structure had a good fit for mothers and fathers. The scale demonstrated adequate internal consistency for mothers (child-responsible $\alpha = .90$; parent-causal $\alpha = .81$) and fathers (child-responsible $\alpha = .88$; parent-causal $\alpha = .85$). It showed good test–retest reliability for mothers and fathers on child-responsible ($r = .68$ and.76), and parent-causal factors ($r = .76$ and .55) respectively, and promising convergent and good discriminant validity overall, but particularly for mothers. The PCS was selected for this study because it specifically assesses for dysfunctional attributions which are likely to influence parenting style; and engagement in the intervention depending on whether a caregiver views themselves as the appropriate agent of change for their child's behaviour problems. In the present study the scale demonstrated good internal consistency for the child responsible and parent causal

scales pre-group (Cronbach α =.85 and .83) and post-group (Cronbach α=.90, .80) across caregivers.

3.4.2 Measurement of Parenting Self-Efficacy

The assessment of parenting self-efficacy (PSE) is generally explored in one of three ways; general measures focus on the extent to which a parent feels competent in the parenting role in general; task-related measures assess global PSE with specific items (e.g. caring for a sick child); and narrow-domain measures focus on one specific parenting domain such as discipline, teaching or communication. The measurement of PSE has been criticised for the limited availability of valid and reliable questionnaires and the misuse of measures with similar constructs (Jones & Prinz, 2005). There is considerable variation in the measures used which makes synthesis across studies difficult; while task-related measures are more popular, domain-specific measures capture more precise associations between self-appraisals and actual behaviour. For example, the Parenting Sense of Competence scale (PSOC; Johnston & Mash, 1989) has been widely used despite the restriction of self-efficacy statements to a seven-item subscale. Several instruments that measure the domain-general level are available (Abidin, 1990; Dumka *et al.* 1996); but domain-specific parenting measures based on a task-oriented approach are scarcely employed in the literature. Bandura (1997, p.43 cited in Jones & Prinz, 2005) suggested that efficacy beliefs should be measured with "items portraying different levels of task demands", phrased in terms of "can do", and in such a way that individuals rate the strength of their belief in their ability to execute the activity. The Tool of Parenting Self Efficacy (TOPSE; Bloomfield & Kendall, 2007; Kendall & Bloomfield, 2005) meets these criteria, and was developed within the NHS specifically as an aid to evaluate parenting programmes. It is built on sound theoretical constructs and developed directly from focus group transcripts.

3.4.2.1 Tool Of Parenting Self Efficacy (TOPSE; Kendall & Bloomfield, 2005).

The TOPSE is a 48-item self-report measure of change in PSE (Appendix 5.4). Parents are required to rate on a scale of zero (completely disagree) to ten (completely agree) how much they agree with statements relating to eight domain-

specific subscales of parenting; Emotion and Affection (e.g. 'When my child is sad I understand why'), Play and Enjoyment (e.g., 'Playing with my child comes easily to me'), Empathy and Understanding (e.g., 'I am able to put myself in my child's shoes'), Control (e.g., 'I can remain calm when facing difficulties'), Discipline and Boundaries (e.g., 'I am consistent in the way I use discipline'), Pressures (e.g., 'I do not feel a need to compare myself to other parents'), Self Acceptance (e.g., I know I am a good enough parent'), and Learning and Knowledge (e.g., 'I can overcome most problems with a bit of advice'). The scale includes positive and negatively worded items and responses are summed to create a total score, with higher scores corresponding to higher levels of parenting self-efficacy. Internal consistency for the subscales ranges between $\alpha = .80$ to $\alpha = .89$, with an overall scale reliability of $\alpha = .94$. The TOPSE was selected for this study as it is sensitive to parenting in the UK and aids the evaluation of interventions that develop parents' self-efficacy through skills acquisition, performance mastery and social learning principles, such as the IY programme. Item level data from the present study sample estimated good internal consistency pre- and post-group (Cronbach $\alpha = .93$ and $\alpha = .94$).

3.4.3 Measurement of attachment

The measurement of attachment in adults is generally attempted in one of two ways; a 'narrative approach' is grounded in the theory that an individual's internal working models can be explored through the way they speak about past and present relationships. Attachment experiences are explored through semi-structured interviews, such as the Adult Attachment Interview (AAI; George *et al.* 1985). These are delivered, transcribed and analysed by trained interviewers, to yield classifications of attachment "states of mind". An alternative approach is through forced-choice self-report instruments, first developed by Hazan & Shaver (1987; 1994). Several measures of adult attachment have subsequently been developed for use in research and clinical practice, although their psychometric properties have been questioned (Crowell & Treboux, 1995; Stein *et al*. 2002). These measures are derived from Bowlby's (1982) attachment theory and correspond with the infant attachment styles (secure, ambivalent and avoidant attachment) classified by Ainsworth and colleagues (Ainsworth *et al*. 1978). Recognising the heterogeneity of

available measures, the most frequently used measures and classification systems have been summarised (Shorey & Snyder, 2006).

However, debate continues whether the underlying construct of attachment is best defined by a dimensional approach which assumes that people can be ordered on differing dimensions, or a categorical approach which characterises individuals by discrete types (see Fraley & Spieker, 2003). A categorical approach has intuitive clinical appeal, but has lower statistical power through loss of detail, and may encourage arbitrary labels and misclassification errors (Sroufe, 2003). Dimensions of attachment avoid a loss of information, allow for individual variation and a wider range of statistical analyses (Griffin & Bartholomew, 1994). However, they can be harder to interpret and are less informative in clinical settings. A self-report measure was selected as the most convenient and efficient method to include on a battery of measures. Despite the use of self-report measures of attachment, an evaluation of their psychometric properties is limited (Kurdek, 2002). The Relationships Scales Questionnaire (RSQ; Griffin & Bartholomew, 1994) is a well established measure of adult attachment that was selected for the present study for its brevity and flexibility of scoring.

3.4.3.1 Relationship Scales Questionnaire (RSQ; Griffin & Bartholomew, 1994).

The RSQ is a 30-item self-report questionnaire of adult attachment styles (Appendix 5.5). Statements regarding close relationships are rated on a five-point scale where one = not at all like me and five = very much like me. There are several competing methods of calculating RSQ scores and numerous alternative models for measuring attachment (Kurdek, 2002). The original scoring system provides a continuous measure of attachment corresponding to the four attachment styles of the AAI; 'secure' 'dismissing' 'preoccupied' and 'fearful'. However, alternative scoring based on two (Allen *et al.* 2011) and three (Bäckström & Holmes, 2007; Collins & Read, 1990) factors exist. The RSQ has demonstrated good convergent, predictive and discriminant validity (Ravitz *et al.* 2010). Cassidy (2003) argued that it is important to consider from theoretical and methodological perspectives, the circumstances when a categorical or dimensional approach might best be used.

Given the scoring options, and in the absence of norms, the measure was administered and scored to best inform regression-based hypotheses about the relationships between attachment style and outcome. A version of the questionnaire requiring participants to rate statements on a True/False basis was administered, corresponding to ratings of one and five. The re-coding of scales has been used elsewhere (e.g. Mayer & Massa, 2003), prior to factor analysis. A factor analysis of the item level data for this study was conducted to determine the appropriate model for the sample. Principal components analysis using promax rotation extracted nine eigenvalues with a value over one; fixing the factor extraction to four, and suppressing coefficients less than .4 explained 42% of the variance, but with inconsistent loading onto the respective items. Extracting two factors explained 30% of the variance, with a considerably better fit of the items to attachment 'anxiety' and attachment 'avoidance' constructs. This is supported by Kurdek (2002) who concluded that a two factor model of the RSQ on dimensions of avoidance/anxiety is the most reliable. Therefore, avoidant subscale scores were calculated from items 1, 2, $3^{Reversed}$, 5, 6, $10^{Reversed,}$ 13, $15^{Reversed}$, 19, 20, 24, 26, $17^{Reversed,}$ 29, $30^{Reversed}$ and anxious subscales scores from items 4, 7, 8, 9, 11, 12, 14, 16, 17, 18, 21, 22, 23, 25, 28. This structure demonstrated similar and adequate internal consistency for the attachment-avoidance (Cronbach $\alpha = .73$) and attachment-anxiety scales (Cronbach $\alpha = .78$) and total scale ($\alpha = .84$) at baseline. Post-group scores were collected as part of the battery, but did not inform any hypotheses for the present study.

3.4.4 Participant characteristics

Participants provided basic demographic information about family structure, age, and employment status, among others. This was designed with family adversity risk factors in mind, including single parenthood, teen parenthood, and low maternal education. Information of this kind has been collapsed into a Family Adversity Index (FAI; Hemphill & Littlefield, 2006), although it was not indexed in the present study as details about family income was not requested. Information about child co-morbidity is regularly collected in research, but was not requested for this study to avoid pathologising child behaviour at a critical point when the role of parenting was being reinforced. However, it is likely that a proportion of the sample had been

diagnosed with Autistic Spectrum Disorder or Attention Deficit Hyperactivity Disorder prior to the intervention, or during it.

3.4.5 Primary outcome measure:

3.4.5.1 Eyberg Child Behavior Inventory (ECBI; Eyberg & Ross, 1978).

A 36-item measure of current childhood problem behaviour rated on two scales. The intensity scale requires parents to rate the frequency that particular behaviours occur (e.g. 'Refuses to go to bed on time', 'Argues with parents about rules', Destroys toys and other objects') on a scale of one (never) to seven (always). The problem scale asks parents to report 'Yes' or 'No' whether or not the behaviour is a problem for them. A raw score of 131-133 on the Intensity scale and 15 on the problem scale correspond to a T score of 60 which is considered to be above the clinical cut off , although thresholds of 127 and 11 have been used elsewhere (Eames *et al*., 2006). The inventory has been shown to be highly correlated with independent observations of children's behaviour, to differentiate clinic-referred and non-clinical populations, and be significantly correlated with the Child Behaviour Checklist (CBCL; Achenbach, 1991a). It has high internal consistency (α = .98 in Robinson *et al.* 1981; α = .94 in Gardner *et al.* 2009), test-retest reliability (r=.86) and convergent validity. The ECBI was chosen as it has been widely used as a measure of outcome in parenting intervention research, allowing for a comparison with other studies (Gardner *et al.* 2006; Gardner *et al.* 2010)**.** The present study reported good internal consistency for the intensity scale (α = .88 and α = .91) and (α = .91 and α = .91 for the problem scale pre- and post-group.

3.5 Procedure

3.5.1 Recruitment and assessment process

Participants were recruited from IY groups being delivered across two Tier 3 outpatient CAMHS sites, and one Tier 4 day unit in the same health board. Forthcoming groups were identified by the consultant clinical psychologist supervising group leaders as part of the fidelity and accreditation process. The primary site intakes parents to IY programmes in January, May and September on a

rolling programme. Relevant group leaders were contacted prior to the start of the group to arrange a suitable time for the lead researcher to introduce the study to attending parents. This typically occurred in an informal pre-group session arranged to orientate the parents to the IY model and give them opportunity to meet other parents, or prior to the start of the first session. The purpose of the research was explained to the parents as a group, and participant information sheets distributed for consideration and further reference (Appendix 5.6). It was emphasised that their decision to participate would not impact on the quality of treatment they received, and their responses would not be shared with the clinical team responsible for the care of their child. Questions were answered, and a limited number of queries addressed; this typically concerned explaining that a request for their individual findings could not be met. No participants requested additional time to consider their response. All consent forms and the battery of three parenting specific measures were completed in the group room. Measures were delivered in the same order and format; TOPSE, PCS, RSQ, demographic information and took approximately 20 minutes to complete. A limited number of participants requested assistance reading the questionnaires due to poor literacy or forgetting their reading glasses. All declined the option of taking the battery home to complete in their own time. A week later, prior to the start of the next session, they completed the child behaviour outcome measure (ECBI) and received a copy of their consent form with a unique identifier code in the event they wished to withdraw from the study at a later date (Appendix 5.7). The delay of a week was introduced to mitigate the use of global parent-report measures. Copies of the consent form were also filed in the 3rd party section of their child's clinical notes, and retained by the lead research for a record of which participants had requested a summary of the study findings. Group leaders were contacted prior to the end of the programme to make similar arrangements for the completion of the same battery of measures, in the same order, but without the demographic questionnaire. Participants were asked if they still consented to participate in the study prior to distribution of the post-group questionnaires. Individuals who had attended the majority of sessions but were not present at the time of distribution were discussed with group leaders to decide how best to approach them for data collection. This included leaving the forms with a

keyworker, sending the forms home with a spouse or posting with a SAE. Due to the anticipated length of the data collection, participants were given an indication of when they would be likely to receive a summary of the study findings, if requested.

3.5.2 Confidentiality and data storage

Participants who requested a summary were informed that an application would be made to the Caldicott Guardian on completion of the study to request access to their child's notes for a current correspondence address, removing the need to retain patient identifiable information. The psychometric battery was organised to ensure that parents' names were only required on a separate piece of paper attached to the front which was subsequently removed and replaced with a unique identifier code, rendering their responses anonymous. Data entry was performed by the lead researcher and stored on a password protected, encrypted memory stick provided by the technology department. Demographic information was coded in accordance with author guidelines for the selected journal (e.g. without highschool diploma = 1, highschool graduate without college education = 2 etc.), but no names, initials or dates of birth were stored. Item level data for the pre- and post-programme measures were entered by unique identifier only. Paper copies of consent forms were retained on NHS property in accordance with the ethics application.

3.6 Ethics

Ethical approval was sought from the South East Scotland Regional Ethics Committee (SESREC Reference 11/AL/00/50) through the standard Integrated Research Application System (IRAS) process. Consideration of the application prior to the arranged panel resulted in the Scientific Officer deciding that the study did not require NHS ethical review (Appendix 5.8). An application to the Project Approval Group for the relevant Quality Improvement Team was accepted, granting permission to collect data across CAMHS sites (Appendix 5.9). The study was designed with the full support of the clinical lead on parenting, and the Head of Service for CAMHS. It was not anticipated that the content of the questionnaires would cause distress for the participants, however, information was provided in the participant information sheet about who to contact if they wished to discuss issues

further, or withdraw from the study. All participants were receiving a minimum of 12 weeks intervention following the first battery of measures, providing an accessible source of support for any issues arising. Some families may have had voluntary or statutory input from social services for issues related to their child that might have raised concerns about how their completed questionnaires would be used. To achieve open and honest responses, reassurance was provided that no information would be shared unless information was provided that indicated they or someone else was at risk of harm. As with most research, the lead researcher recognised that the current participants did not stand to gain from the study findings, but that they would be helping to inform an evidence base to improve the delivery of services. No other parenting research was known to be taking place that might have over burdened participants.

3.7 Statistical analysis

3.7.1 Sample size calculation

A statistically significant result with a small effect size may not be clinically meaningful, and less likely to inform clinical practice (Jacobson & Truax, 1991). Of the three selected predictors, PSE is the only variable with an evidence base from which to draw effect sizes for sample size calculations. Jones and Prince (2005) reviewed six studies and concluded that moderate effect sizes for the relationship between PSE and child behaviour problems exist. Of the reviewed articles, an R^2 value of .12 for the strength of PSE as a predictor of various child behaviours was reported (Coleman & Karraker, 2003). Using an effect size calculator for multiple regression analyses (www.danielsoper.com), an R^2 value of .12 gives a Cohen's f^2 value of 0.136, equivalent to a medium effect size. Using G Power 3.1 software and guidance from Faul *et al*. (2009), a Cohen's f^2 value of 0.136, with .05 error probability, and 3 predictors estimated a sample size of 52 (Linear multiple regression, R^2 deviation from zero). A medium effect size is justified on the basis of the Jones and Prince (2005) review, however to have sufficient power to detect a more clinically meaningful effect size, a sample size of 68 is recommended.

With limited studies exploring the selected predictors, alternative methods were considered. A review of 166 mediation studies between 2000-2003 highlighted sample sizes of between 20 and 16,466 participants, and a median sample size of 187 (Fritz & MacKinnon, 2007). The most frequent range was 101-150 (17.9%), followed by 51-100 (16.4%). They subsequently presented guidelines for researchers in determining sample sizes necessary to detect an effect for the most common mediation analyses with 0.8 power, across various parameters. Using 2000 bias corrected bootstrap procedures, and Cohen's criteria for estimations of the size of a and b paths (S = 0.14, H = 0.26, M = 0.39, L = 0.59), sample sizes for the various combinations are estimated as follows; MM, n=71, ML, n= 53, LM, n= 54, LL, n= 34. Equivalent sizes using a less powerful approach (Baron & Kenny, 1986) ranged between 92 and 397. In a study using figures from the same intervention and primary outcome, a total sample size of 44 was estimated to be sufficient (Gardner *et al.* 2006). In recognition of the likelihood that treatment effects might be weaker when delivered in a voluntary sector setting, and to allow for attrition, they aimed for 76. In summary, efforts were made to recruit between 52 and 76 participants to have sufficient power to detect a medium to large effect size of the models using bias corrected bootstrap procedures.

The last observation carried forward technique was used for missing data sets, allowing for an Intent To Treat analysis (Kendall et al. 1999). As the additional effects of child training alongside PT are small (Larsson *et al*., 2009; Lundhal *et al.*, 2006), data from families receiving PT only or PT + CT was collapsed (Fossum *et al.*, 2009; Larsson *et al.*, 2009). Statistical analyses were conducted using Statistical Package for the Social Sciences version 19.0 (SPSS v. 19). Descriptive and exploratory analyses were conducted including tests of normality, correlations, appropriate tests for change in scores, and the significance of the treatment effect in terms of statistical and return to normal functioning.

3.7.2 Multiple regression model

Multiple regression analyses are a set of statistical techniques that are used when the purpose of the analyses are to predict the relationship between several predictors, and

an outcome. Naturally occurring scores on a number of predictor variables are entered into the model in steps to establish which set or combination of the observed variables contributes to the best prediction of the outcome (Tabachnik & Fidell, 1996). Parenting self-efficacy and the two dimensions of parental attributions were entered into a linear regression model at step one to test the amount of variance on outcome they contributed to individually, and in combination. Entering the two dimensions of attachment style at step two tested whether they contributed further to the model, and any influence they exerted on the other variables.

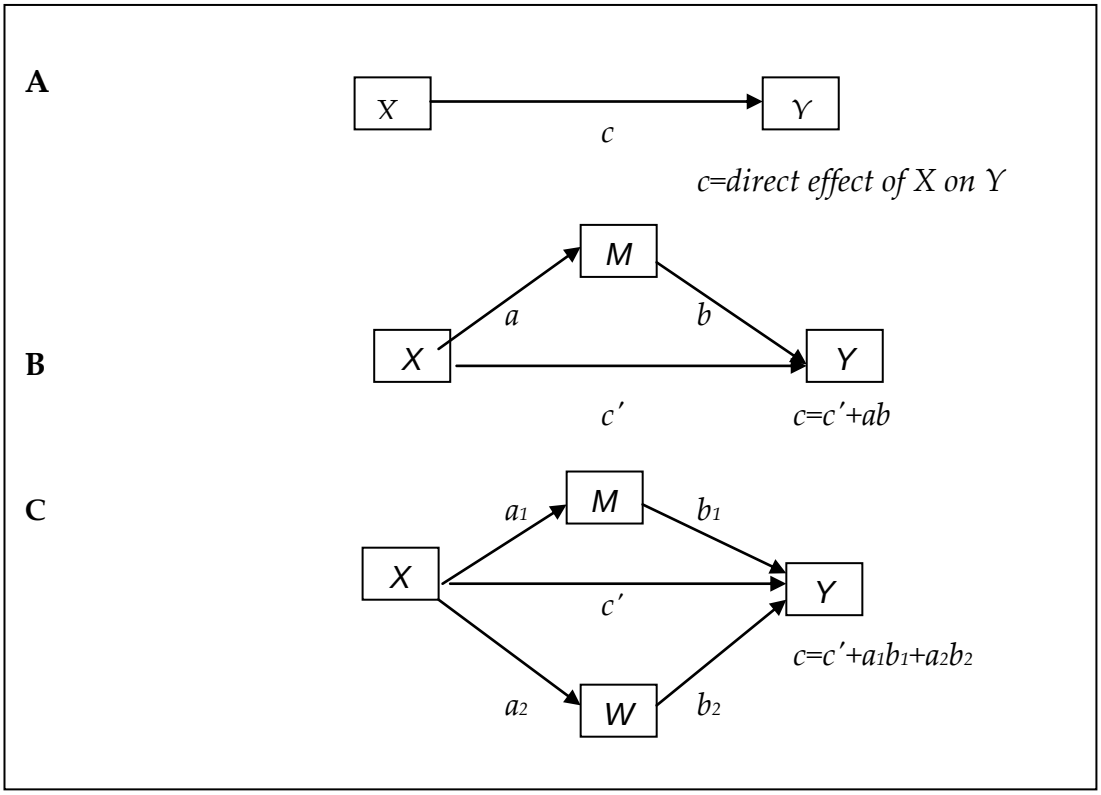
3.7.3 Developments in mediation research

Current understanding defines predictors as baseline variables accounting for better or worse outcome regardless of treatment condition. Moderators influence the direction and magnitude of the relationship between treatment and outcome, identifying subgroups with more or less likelihood of change. Mediators are intervening variables that occur during treatment and may account for the relationship between the predictor outcome variable (see Kraemer, 2008). In an intervening variable model, predictor variable (*X)* is proposed to exert an effect on outcome variable (*Y)* through one or more mediator variables (M), illustrated in Figure 3.2.

Models B and C represent the most simple intervening variable models, although there are many more possibilities (see Hayes, 2009). Model A presents *X*'s total effect on *Y*, (denoted by *c*). This *total effect*, interpreted as the expected amount by which two cases differ by one unit on *X* are expected to differ on *Y*, can occur through a direct and indirect processes. A *direct effect* describes the influence of one variable on another that is not mediated by any other variable; or the part of the effect of *X* on *Y* that is independent of the pathway through *M*. An *indirect* effect is the amount by which two cases who differ by one unit on *X* are expected to differ on *Y* through *X*'s effect on *M*, which in turn effects *Y*; or the effect of one variable on another that is mediated by at least one other variable in a model. Model B illustrates a simple mediation model where *X* effects *Y* through *M*; where *a* is the effect of *X* on *M*; *b* is the effect of *M* on *Y* controlling for *a*; *ab* is the product of *a* and *b* paths (the

specific indirect effect of *X* on *Y* through *M*; *c'* is the direct effect of *X* on *Y* controlling for the indirect effect of the *ab* paths. The same rules apply in more complex models, such as Model C. In *C*, the total effect is equal to the direct effect of *X* on *Y*, plus the sum of the indirect effect through *M* and the indirect effect through *W*.. In a model of two or more intervening variables, the indirect effect through a given intervening variable is called a *specific indirect effect* (e.g. the specific indirect effect of *X* on *Y* through *M*), and the sum of the specific indirect effects is called the *total indirect effect*.

Figure 3.2: The Total effect of *X* on *Y* (A), a simple mediation model (B), a single-step multiple mediator model (C), and a multiple-step multiple mediator model (adapted from Hayes, 2009)



Although structural equation modelling (SEM) is a popular method to test path models involving intervening variables because of the information it provides on the degree of fit for the entire model after controlling for measurement error, proper use of regression techniques can also provide meaningful tests of hypotheses (see

Tabachnik & Fidell, 1996). However, at least a dozen methods for testing hypotheses about mediation have been proposed, and tests that differ in subtle ways are being used across studies (James *et al.* 2006; MacKinnon *et al*. 2002).

3.7.3.1 Causal steps approach

The most widely used method for testing hypotheses about intervening variables effects is the causal steps approach popularized by Baron and Kenny (1986), in which the researcher estimates direct and indirect paths in the model to ascertain if certain statistical criteria are met for mediation. Their article is one of the most frequently cited in mediation studies, providing statistical models that only establish the presence of a mediator variable when all relevant paths are statistically significant. The existence of an indirect effect is inferred logically by the outcome of a set of hypotheses tests, each of which carries with it the possibility of a Type I or Type II decision error. With an increase in the number of null hypotheses that need to be rejected in order to claim an indirect effect, the risk of finding no effect where one exists increases. Despite its popularity and intuitive appeal, this approach has been criticised for having low statistical power, and the least likely of the many methods available to detect the indirect effect (MacKinnon *et al.* 2002).

3.7.3.2 Product of coefficient approach.

The Sobel test (Sobel, 1982) uses the product of the coefficients *a* and *b* to quantify an indirect effect, and is frequently used as a supplement to the Baron and Kenny approach. If either *a* or *b* is zero, their product will be zero; if both a and b are non zero, because M mediates the X-Y relationship, the product will be non zero. The product of *a* and *b* will be further from zero as the strength of the indirect effect increases (Preacher & Hayes, cited in Hayes *et al*. 2008) . This has been criticised as an erroneous exercise as the outcome of hypotheses about *a* and *b* do not provide additional information about the size or significance of the indirect effect. In addition, the Sobel test requires a normal distribution of the indirect effect, when the sampling distribution of *ab* tends to be asymmetric through nonzero skewness and kurtosis particularly in small sized samples (Bollen & Stine, 1990). Researchers are

being encouraged away from the use of techniques that rely on assumptions, as more complex and powerful tests are being developed that do not make these assumptions.

3.7.3.3 Bootstrapping

Bootstrapping is a non-parametric re-sampling procedure advocated as a method for testing mediation that does not impose the assumption of normality of the sampling distribution. Bootstrapping generates an empirical approximation of the sampling distribution of the product of the *a* and *b* paths by repeatedly re-sampling the data through replacement. Each time a case is drawn from the original sample, it is re-entered with the potential of being selected again as the sample size of n is constructed. On construction of a re-sample, the estimates of *a* and *b* are used to calculate the product of the path coefficient ab. This process is repeated for a total of k times, where k is at least 1000, although 5000 is recommended (Hayes, 2009). Confidence intervals of 95% are generated against which to test the path of interest; if the lower and upper bounds do not cross zero, a significant indirect effect can be assumed with 95% confidence. Confidence intervals can be asymmetrical, with the upper and lower limits having different distances from the point estimate. Bootstrapping, particularly bias-corrected bootstrapping, is the most powerful method of making inferences about indirect effects in any intervening variable model regardless of the number and complexity of paths between *X* and *Y* (MacKinnon *et al.* 2004). SPSS macros are now widely available to facilitate the computation process (Preacher & Hayes, 2004; 2008), and the use of bootstrapping methods is strongly recommended, particularly in the case of small to moderate samples (Shrout & Bolger, 2002).

3.7.4 Multiple mediation

Multiple mediation is the appropriate analysis when the mediation by multiple potential mediators is hypothesised (Preacher & Hayes, 2004; 2008). Assessing multiple mediation tests whether or not an indirect effect exists, and how to examine the individual mediating effects of several candidate variables that may be inter-correlated. Using the causal steps approach limits the examination of differences in

the relative sizes of specific indirect effects. The specific indirect effect through a mediator in multiple mediation models differs from the indirect effect through that same mediator in isolation because is it conditional on the inclusion of the other mediators in the model, except in the unlikely circumstance that no other mediators in the model are correlated with it. The effects of the mediators on Y (the b paths) are often attenuated by the degree of correlation between mediators, which can compromise the significance of particular specific indirect effects. When an intervention is designed to impact on multiple intervening variables to achieve a desired outcome, individual mediators may not demonstrate large unique effects on the outcome. Subsequently, attempts were made to select variables and measures to minimise multi-collinearity. The approaches discussed for assessing total and specific indirect effects for simple mediator models can be applied to multiple mediation models, and the same SPSS macros applied (Preacher & Hayes, 2008).

3.7.5 Combining moderation and mediation

The processes of mediation and moderation can be combined, such that moderation is mediated or mediation moderated (Muller *et al*. 2005; Preacher *et al*. 2007). Mediation refers to a sequence of causal relations by which X exerts its effect on Y by influencing intervening variables. Moderation describes a situation in which X's effect on Y varies as a function of some third variable M, the moderator variable. A moderated effect is an interaction between X and the moderator variable, or the product of X and M. For instance, an investigator might propose that X exerts its effect on Y through some variable M, but that this indirect effect varies by gender, or in the present study, attachment style. The distinction of mediated moderation and moderated mediation is one of interpretative focus as the models are mathematically equivalent. *Moderated mediation,* or a *conditional indirect effect,* is defined when the size of an indirect effect is conditional on the level or value of the moderator variable. The relevance of moderated mediation to the therapeutic process seems intuitive, but tests of this kind are rarely conducted, and none of this kind appear in recent parenting studies. MODMED macros supporting command syntax for moderated mediation analyses were used to test the interaction between attachment

style and parenting self-efficacy on the indirect effect of parental attributions on child behaviour (Preacher *et al*. 2007). Command syntax corresponding to model 3 was entered (where ECBIIT2 is the dependent variable, TOPSECHANGE is change in parenting self-efficacy scores, RSQAVOIDT1 is baseline attachment avoidance and PCSCRT2 is post-treatment child-responsible attributions (substituted with PCSPCT2 in second analysis to explore parent-causal attributions), with advised amendments from the initial article: MODMED VARS = ECBIIT2 TOPSECHANGE RSQAVOIDT1 PCSCRT2 / DV = ECBIIT2 / MED = TOPSECHANGE / DVMODEL = TOPSECHANGE RSQAVOIDT1 / MMODEL = PCSCRT2 / BOOT = 5000.

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Chapter 4: Journal article[a]

4.1 Title page

Parent attachment style, attributions and self-efficacy as predictors, moderators and mediators of outcome in an evidence based parenting intervention for child externalising behaviour problems.

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4.2 Abstract

Objectives: Finding further variables that influence parent skills training outcomes will explain who benefits most, and how change occurs. This will ensure that families receive appropriate treatments, and services deliver interventions efficiently and effectively.

Methods: 79 parents attending 15 Incredible Years programmes in a CAMHS setting completed pre-treatment questionnaires measuring attachment style, attributions, self-efficacy and child behaviour. 52 parents completed the same battery post-treatment, and missing data was carried forward in an intent to treat analysis. Data was analysed using multiple regression, multiple mediation and moderated mediation.

Results: Increases in self-efficacy, and reductions in dysfunctional parenting attributions and problem child behaviour were reported post-treatment, with a significant number of children displaying sub-clinical levels of problem behaviour. Baseline child-responsible attributions and self-efficacy accounted for up to 40% of the variance in baseline child behaviour, with insecure attachment style moderating parent-causal attributions in the model. Self-efficacy and child-responsible attributions had partial effects on post-treatment behaviour, and attachment-avoidance exerted a direct effect on outcome which did not exist pre-treatment. The indirect effect of parental attributions on child behaviour through self-efficacy was moderated by attachment which reduced the significance of the direct and indirect paths.

Conclusions: An evidence based parent training programme achieved clinically significant results in a clinical setting. Dysfunctional parent attributions and self-efficacy appear related to pre- and post-treatment levels of child behaviour, which could be screened for in the referral process. The direct and indirect role of attachment style on parent training outcomes adds a new candidate variable to the literature that warrants further exploration.

Keywords: parent, child, training, outcome, problem behaviour

4.3 Introduction

Early scepticism about psychotherapy has maintained efforts to demonstrate its effectiveness, informing an extensive evidence base[1]. However, no intervention is universally effective, and research into the change process is needed to advance understanding[2]. It has been over four decades since Paul[3] (p.111) rejected the question, "does therapy work?" over, "what treatment, by whom, is most effective for this individual with that specific problem, and under what set of circumstances?". However, the majority of variance in treatment outcome remains unexplained, meaning that costly interventions are under performing. To move beyond pragmatic efficacy studies to more explanatory designs requires a shift in psychotherapy research; calls for which have been made in the child and adolescent literature[4,5].

Early onset behaviour problems such as aggressive, defiant and non-compliant behaviour are estimated to affect 5-30% of children aged 5-15 years[6,7]. A smaller number of children display externalising behaviours that warrant a diagnosis of Conduct Disorder (CD) or Oppositional Defiant Disorder (ODD). These are stable problems that, left untreated, increase the risk of a negative trajectory of school exclusion, unemployment[8], poor mental health[9], substance misuse and criminality[10]. The use of health, social and justice services is ten times higher for this population, and the financial burden to individuals, families and society growing[11,12]. Subsequently, the prevention and reduction of childhood behaviour problems is a key driver in early years' frameworks worldwide[13,14].

Recognition that parents contribute to the development and maintenance of disruptive behaviour shifted interventions away from individual child therapy. Numerous trials and meta-analyses have positioned group-based Parent Skills Training (PT) as the most effective intervention[15,16]. Parenting behaviours that predispose the development of behaviour problems include harsh and inconsistent discipline and lack of supervision[17]. PT aims to reduce negative child behaviours by modelling positive parenting skills. Manualised programmes such as the Incredible Years (IY)[18], Positive Parenting Programme (Triple-P)[19] and Helping the Non-Compliant Child (HNC)[20] are designed to enhance treatment integrity and maximise

gains. Subsequently, they are advocated by the United Nations Office on Drugs and Crime (UNODC)[21], National Institute for Clinical Excellence (NICE)[22,23], and experts in the field[15,24].

PT studies have reported small to large effect sizes at long-term follow-up[25,26]. However, not all research supports the efficacy of PT, and even the most successful interventions are effective for only two-thirds of families[27]. The continued drive to demonstrate its efficacy has attracted criticism, amid calls for studies to explore which factors influence change[1,5]. Eyberg et al.[24] concluded that although the number of psychosocial treatments for children with disruptive behaviour increased in the 10 years since their initial review[15], progress on how these treatments produce change, or for whom they work most is relatively scant. To understand this will help to deliver interventions that yield larger effect sizes, or the same effect sizes more efficiently.

The process of identifying variables that exert direct and indirect effects on outcome is explored through the examination of predictors, moderators and mediators[28]. The seminal article by Baron and Kenny[29] remains the most popular approach to their investigation[30]. However, attempts to refine and standardise the definitions[31,32] and statistical techniques[33,34] are ongoing to improve research quality. Current understanding defines predictors as baseline variables that relate to outcome regardless of treatment condition; moderators influence the direction and magnitude of the relationship between treatment and outcome, identifying subgroups with more or less likelihood of change; mediators are intervening variables that occur during treatment and may be mechanisms of change[35]. In theory, variables can serve as predictors, moderators and mediators of outcome; for example, if both baseline parenting and improvements in parenting contribute independently to outcome[36].

Effects can be limited by poor treatment adherence, attendance[37] and drop out[38]. A number of potential child, parent and familial characteristics have also been explored. Demographic characteristics are popular due their routine collection in studies; significant findings have been found the predictive role of child gender and

age[39], maternal education, age and marital status[40], and negative life events[41,42]. Currently, the strongest predictors of outcome are levels of pre-treatment behaviour problems[43,44], maternal depression[45,46] and family adversity[44,40]. These are all also known moderators, alongside maternal education[40] and child co-morbidity[47]. Possible mechanisms of change include maternal mood[48,49] and change in parenting style[50,51]. However, conflicting evidence exists that relates higher levels of problem behaviour and maternal depression to better[44,52] or worse outcomes[46]. Two meta-analyses synthesising thirty years of data both concluded that economically disadvantaged families benefit less from PT[25,53]. Although this cannot be targeted directly, the finding that these families achieve more in individually-delivered PT can be used to tailor interventions. However, common variables are over-researched, there are apparent barriers to complex analyses in clinical settings. The paucity of moderator and mediator analyses relative to predictors has been criticised[54], as has the lack of interest into mechanisms that have received attention in the adult literature, such as the therapeutic alliance[55-57].

The selection of potential variables should be guided by theory to avoid meaningless explorations[58,1]. Attempts should be made to minimise their conceptual overlap as contrasts compare their unique contribution to the model above and beyond other mediators. The present study draws on the theoretical model underpinning skills-based PT, of which the Incredible Years series is particularly well established[59]. It has met rigorous criteria including randomized controlled trials, replication and long-term follow-up. It has been used as a prevention[18,60] and intervention for problem behaviour in clinical and community settings[48]. IY employs a collaborative approach to Bandura's[61] cognitive social learning theory (SLT). SLT frames social learning in the context of an individual's environmental, cognitive and behavioural factors; learning occurs via observation, imitation and modelling of others, and behavioural reinforcements. SLT-based PT aims to increase positive parenting through collaboration with the group therapist. There is growing interest in alternative theories that may explain ineffective parenting and be barriers to change. Scott and Dadds[62] suggested that attachment, structural family systems and cognitive-attribution theories may explain why some families do not benefit from PT. Others emphasise that future research should explore how dysfunctional attributions,

parenting self-efficacy and affect regulation interfere with effective parenting[63]. With this in mind, the present study explores *parenting self-efficacy, parenting attributions* and *parent attachment style*.

Derived from SLT, perceived self-efficacy describes an individual's belief in their ability to perform a given task[61], and develops through modelling, experiential learning and performance mastery. Parenting self-efficacy (PSE) is a promising area of research to resolve individual differences in parenting styles. Knowledge of appropriate parenting behaviours and confidence to implement them is a determinant of discipline style[64]. Parents with high PSE will persist at tasks in the face of difficulties, and be more competent and sensitive in their parenting[65,66]. Parents low in PSE use more coercive and aggressive parenting techniques[66,67]. PSE is a significant predictor contributing to improvements in child behaviour[45,68], and been found to moderate treatment response[47]. Mixed results have been reported on whether it mediates the effect of a number of parent and child variables on outcomes[48,66,69]. However, the argument for PSE is complicated by the misuse of definitions and tools that overlap with constructs such as parenting competence[70].

SLT positions the causal attributions or 'beliefs' that people form to make sense of their environment as mediators between antecedent events and emotional and behavioural responses[71,72]. Causal attributions explain why an event occurred and responsibility attributions concern an individual's accountability[73]. Individuals whose self-causal attributions for negative events are internal, stable and global are more likely to experience reduced self-esteem, helplessness and depression than individuals who attribute similar events to external, unstable and specific causes[74]. Parents of aggressive children are more likely to attribute their children's misbehaviour to more dispositional, intentional and stable causes compared to parents of non-problem children[63]. The ways in which parents interpret problem behaviours influences their choice of discipline and affective response[75,76]. Dysfunctional attributional styles have been associated with harsh or coercive discipline strategies[77], and lax or permissive parenting[76]. They may limit a parents'

capacity to parent positively, and also their level of engagement in PT requiring child behaviour change through their parenting practices.

Bowlby's[78] attachment theory proposes that attachment styles formed in infancy shape internal working models of self and others that become internalised personality traits across the life span[79]. The original focus on affectional bonds between infants and their caregivers[80] was extended to adult romantic relationships[81]. Adult attachment styles describe views towards rejection, intimacy and independence in relationships; if attachment figures are not available or supportive, and negative models are formed, 'insecure' avoidant and anxious attachment styles are activated. In PT the group pleaders work collaboratively with parents to solicit their ideas and enable them to share their experiences and a strong therapeutic alliance is one of the best predictors of therapeutic change[82]**.** A parent's attachment style will influence how well they are able to engage in group-based PT, and use it as a 'secure base' from which to explore new ways of parenting[57,83]. Individuals high in attachment avoidance may be distrusting of others, and reluctant to disclose, or hear sensitive information from other group members. An anxious attachment style can result in unhelpful behaviours in group therapy such as non-assertiveness in discussion and groupwork exercises[84].

With increasing demand on services and accountability for impact, treatments need to be delivered effectively and efficiently. Finding further variables that differentiate which parents gain more, the size of improvements and the mechanisms of change will help to ensure that families are offered appropriate treatments. The need to bridge the research to practice gap by evaluating PT in real-world settings with greater potential for dissemination is important[60]. This study aims to explore three parent-related characteristics using the Incredible Years PT being delivered as part of regular clinical services to address some of these criticisms.

4.4 Study hypotheses

The present study extends the literature by examining previously investigated variables with more reliable measures for the participant population, selecting

attachment style as a new candidate variable that has not received any attention, and adding to the evidence base of PT delivered in 'real world' settings. It aims to explore if attachment style, parenting self-efficacy and parental attributions in parents attending PT predict the severity of externalising child behaviour problems; whether parenting self-efficacy and parenting attributions mediate or moderate the effect of attachment style on outcomes following PT; and if the magnitude of change in child behaviour outcomes is moderated by parent attachment style. It is hypothesised that: (1) Baseline levels of parenting self-efficacy, parental attributions and attachment style will predict pre-treatment child behaviour problems; (2) Increased levels of parenting self-efficacy and change in parental attributions will mediate the effect of baseline attachment style on change in child behaviour outcomes. (3) The indirect effect of post-treatment parental attributions on post-treatment child behaviour is moderated by baseline attachment style because attachment style moderates the effect of self-efficacy on child behaviour.

4.5 Methodology

4.5.1 Design

A within subjects, pre-post design was adopted. As the effectiveness of IY is established, and the programme was delivered in routine clinical practice, the present study did not include a control group, as adopted elsewhere[45]. The study was conducted across three Child and Adolescent Mental Health Service (CAMHS) settings in a Scottish Health Board. The primary site was a multi-disciplinary day unit for 0-12 year olds with externalising behaviour problems. The service model aims to maximise engagement, retention and treatment gains and includes concurrent IY Dinosaur School for children. Two further outpatient sites were identified to increase sample size, one of which provided Dinosaur school.

4.5.2 Participants

Seventy-nine parents and primary caregivers were recruited from a potential of ninety participants attending identified IY programmes commencing between April 2011 and January 2013. Families are referred for assistance with parenting by their

GP, school or mental health professionals. Sixty-six participants were recruited across thirteen programmes delivered in the primary site, and thirteen participants from the two outpatient settings. Sixty-eight (86.1%) children attended concurrent Dinosaur school. Baseline characteristics of the families are presented in Table 4.1.

4.5.3 Inclusion and exclusion criteria

All primary caregivers referred to an IY programme in the identified sites were eligible; multiple caregivers attending for the same index child were recruited individually. Individuals attending in a supportive capacity, with no direct caregiving role were excluded, e.g. advocacy workers. The application of behaviour-based criteria requiring a severity threshold was not adopted to be inclusive. Parents who consented to participate but did not complete the battery of measures within the first three sessions were excluded to avoid their scores being confounded by exposure to the treatment.

4.5.4 Incredible Years Intervention

All participants attended an IY school-aged programme for children aged 6-12 years, delivered in 12-14 weekly group sessions of approximately two hours duration. Due to service demands, one group (n=7) received treatment components condensed into nine sessions. A 'pyramid' of positive parenting skills are introduced through group discussion, DVD vignettes, role play and home practice. Topics include positive attention and child-led play, praise, behavioural reinforcement, limit setting and discipline. Twelve group leaders (five psychologists trained to doctoral or masters level, four specialist nurses, three community mental health workers) delivered the intervention in pairs to groups of between four and nine parents (mode n=6). Six group leaders delivered one programme, and the remainder led up to six groups annually on a rolling basis. All group leaders had been trained by IY trainers from the Seattle site; one of them received accredited group leader status during the study, and others were applying. They received supervision from a consultant clinical psychologist and accredited group leader, and occasional external IY consultation sessions. The majority of sessions were recorded to monitor adherence to the

manual, parent evaluation sheets were completed after each session and the accompanying book provided to parents.

4.6 Measures

Whilst mixed methods of data collection from multiple sources are less susceptible to bias than parent-report, objective observation methods can be costly and intrusive[85]. A battery of valid and reliable self-report questionnaires was selected, with Cronbach alphas of .8 or above sought for each measure, with a value of .7 deemed acceptable[86].

Parent measures

4.6.1 Parent Cognition Scale (PCS; Snarr et al.)[87]. A 30-item parent-report tool that measures child-responsible and parent-causal attributions for the recent behaviour of the respondent's own child. Respondents consider possible causes for their child's behaviour in the last two months, rated on a six-point Likert scale between 1 (always true) and 6 (never true). Each item is reversed on scoring so that higher scores indicate greater endorsement. The measure was designed in recognition that parents may attribute child misconduct to their own behaviour or characteristics, to dysfunctional levels. The scale has demonstrated adequate internal consistency across the two factors for mothers and fathers, and good test-retest reliability, convergent and discriminant validity[87]. In the present study it achieved good internal consistency for the child responsible and parent causal scales pre- (Cronbach α =.85 and .83) and post-group (Cronbach α=.90, .80).

4.6.2 Tool Of Parenting Self Efficacy (TOPSE; Kendall & Bloomfield)[88]. A 48-item parent-report tool designed as a pre- and post-group measure of task-specific parenting self-efficacy that is sensitive and specific to parenting in the UK. Respondents rate six items on a scale of 0 (completely disagree) to 10 (completely agree) across the eight domains of emotion and affection, play and enjoyment, empathy and understanding, control, discipline and boundaries, pressures, self acceptance, and learning and knowledge. The scale contains positively and

negatively worded items and the responses are summed (with six reversed scores) to create a total score. Higher scores reflect higher levels of parenting self-efficacy. The scale has demonstrated good internal consistency and external reliability. Item level data from the study sample demonstrated good internal consistency pre- and post-group (Cronbach α= .93, .94).

4.6.3 Relationship Scales Questionnaire (RSQ; Griffin and Bartholomew)[89]. A 30-item self-report questionnaire designed to assess an individual's style of attachment in adult relationships. Statements about close relationships are rated on a five-point Likert scale between 1 (not at all like me) and 5 (very much like me). A number of viable scoring methods exist to extract two[90], three[91] or four factors[89]. The original scoring system provides a continuous measure for secure, dismissing, preoccupied and fearful attachment styles. Bäckström and Holmes[91] proposed a model comprising secure/insecure, avoidant/dismissing and preoccupied/anxious dimensions. Kurdek[92] concluded that a two factor model of attachment-avoidance and attachment-anxiety was the most reliable. In the absence of norms, and ongoing debate about categorical or dimensional scoring of attachment (see[93]), its administration and scoring was approached to inform study hypotheses. A version requiring participants to rate statements on a True/False basis was administered, corresponding to ratings of 1 and 5. The re-coding of scales has been used elsewhere, prior to factor analysis to determine the appropriate model for the sample (e.g.[94]). Principal components analysis with promax rotation found a four factor model accounted for 42% of the variance, with poor fit on the loaded items. A two factor model accounted for 30% of the variance, with the majority of items loading onto avoidance and anxiety factors, so it was scored to yield ratings on those two dimensions. Avoidant scores were calculated from items 1, 2, $3^{Reversed}$, 5, 6, $10^{Reversed}$, 13, $15^{Reversed}$, 19, 20, 24, 26, $17^{Reversed}$, 29, $30^{Reversed}$. Anxious scores were calculated from 4, 7, 8, 9, 11, 12, 14, 16, 17, 18, 21, 22, 23, 25, 28. This structure demonstrated similar and adequate internal consistency for the attachment-avoidance (Cronbach α = .73) and attachment-anxiety scales (Cronbach α = .78) and total scale (α = .84) at baseline.

Basic demographic information was requested, including factors associated with family adversity[44]. Details about child co-morbidity were not gathered to avoid pathologising problem behaviour, priming parents to child responsible attributions and reinforcing the medical model for those who were hopeful of a diagnosis during treatment. Information about household income was not requested as it is not routinely gathered in a developmental history, and low household income is well established as a risk factor[25,45,53].

Primary outcome measure

4.6.4 Eyberg Child Behaviour Inventory (ECBI; Eyberg & Ross)[95]. A 36-item measure of current problem behaviours yielding two subscales. Respondents rate the frequency of problem behaviours on a scale of 1 (never) to 7 (always), and report 'Yes' or 'No' whether they are problematic. This yields 'intensity' and 'problem' scores which are translated into standard scores. Raw scores above 131 on the intensity scale and 15 on the problem scale correspond to clinical cut-off levels, although thresholds of 127 and 11 have been used elsewhere[96]. The scale has been shown to have good internal consistency, test-retest reliability and convergent validity, and is correlated with the Child Behaviour Checklist (CBCL)[97]. The ability of the ECBI to discriminate between groups of children with and without CD is well documented, and its use as a primary outcome measure in PT studies widespread[27,95]. The present study demonstrated good internal consistency for the intensity (Cronbach $\alpha = .88$ and $\alpha = .91$) and problem scale (Cronbach $\alpha = .91$ and $\alpha = .91$) pre- and post-group.

4.7 Procedure

4.7.1 Recruitment and assessment

The primary site intakes parents to IY programmes in January, May and September, and further groups were identified on an individual basis. Group leaders were contacted to arrange a time for the lead researcher to introduce the study to parents. The purpose of the research was explained, and participant information sheets distributed for consideration and further reference. Willing participants completed a

consent form and 20-minute battery of three parent-specific measures in the group room. A week later, prior to the start of the next session, they completed the primary outcome measure and received a copy of their signed consent form. The battery was organised to ensure that a unique identifier rendered their responses anonymous, reducing any concerns their study responses might be shared with the clinical team. The delay of a week was introduced to mitigate the exclusive use of parent self-report measures. The process was repeated in the final two sessions of the programme for parents still in attendance. Participants who had stopped attending the group were not contacted; responses from parents who were still engaged but not present on the day of distribution for reasons of poor health or late attendance were sough at convenient times.

4.7.2 Power calculation

Sample sizes of between 20 and 16,466 have been reported, and to improve consistency, Fritz and MacKinnon[98] recommended sample sizes required for .8 power to detect an effect for the most common mediation analyses, with various parameters. Using 2000 bias-corrected bootstrapped procedures, and Cohen's criteria for estimations of the size of the *a* and *b* path (S=.14, H=.26, M=.39, L=.59), sample sizes for *ab* path combinations are; MM, n=71; ML, n= 53; LM, n= 54; LL, n= 34. As the more widely researched predictor, effect sizes for PSE were sought in a review by Jones and Prince[99]. An R^2 value of .12 for the strength of PSE as a predictor of problem behaviour[100], converted to a Cohen's f^2 value of 0.136, equivalent to a medium effect size. G Power 3.1 software, with the above parameters, .05 error probability and three predictors, estimated a sample size of 52 participants for sufficient power to detect a medium to large effect size. Therefore, efforts were made to achieve a sample size of between 52 and 71.

4.8 Statistical analysis

Data was missing for 79 non-response items (29 ECBI-I; 39 ECBI-P; 5 PCS; 3 RSQ), and one 36-item scale non-response (ECBI-P), accounting for 0.4% of the overall dataset. One participant did not provide any demographic information. Although more sophisticated methods exist for larger amounts[101], manual guidelines

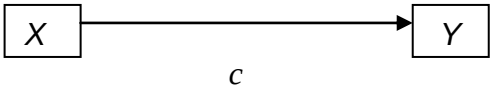
(substitute '1' and 'No') for the ECBI, and individual mean substitution for other measures was used due to the low proportion. Twenty-seven (34.1%) partial or incomplete questionnaire batteries were managed using the last observation carried forward technique[102], for an Intent To Treat analysis of completers and non-completers. As the additional effects of child training alongside PT are small, data from families was collapsed[50,103].

Statistical analyses were conducted using Statistical Package for the Social Sciences version 19.0 (SPSS v. 19). Descriptive and exploratory analyses were conducted including tests of normality, correlations, and the statistical and clinical significance of the treatment effect. Linear multiple regression using forced entry was carried out on all variables at baseline, before mediation and moderation analyses.

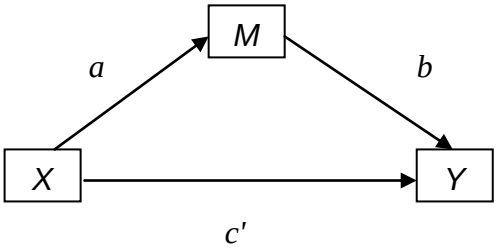
4.8.1 Direct and indirect effects

Mediation, or an indirect effect, is said to occur when the causal effect of a predictor (*X*) on outcome (*Y*) is transmitted by a mediator (*M*), shown in Figure 4.1. The most widely used method for testing hypotheses about intervening variables effects is the causal steps approach popularized by Baron and Kenny[29], in which the researcher estimates each path in the model to ascertain if certain statistical criteria are met. Despite its popularity, this approach has been criticised for being the lowest in power, and the least likely of the many methods available to detect the indirect effect[30]. Bootstrapping has been advocated as more powerful technique that does not assume a normal distribution of the total and specific effects[33,104]. Repeated re-sampling of the indirect effect with replacement from the data generates an empirical estimation of the sampling distribution of the *ab* paths with a 'bootstrapped' sample. Bias-corrected confidence intervals of 95% are generated; if the value of zero does not fall within the lower and upper limits, a significant indirect effect can be assumed with 95% confidence. Bootstrapping x 5000 was applied, as recommended by Hayes[28]. Multiple mediation analyses were explored using INDIRECT macros [105] which allows non-parametric multiple mediation analysis with smaller numbers of participants.

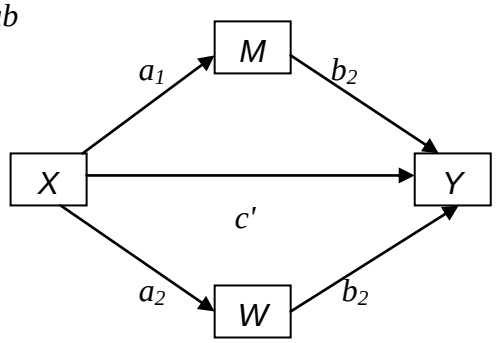
Figure 4.1: The Total effect of *X* on *Y*, a simple mediation and single-step multiple mediator model.



Total effect: c=direct effect of X on Y



Simple mediation: c=c'+ab



Multiple mediation: $c=c'+a_1b_1+a_2b_2$

Note: where a is the effect of X on the proposed mediator M; b is the effect of the proposed mediator M on Y controlling for a; ab is the product of a and b, or the specific indirect effect of X on Y through M, and c' is the direct effect of X on Y controlling for the indirect effects of the ab routes.

The strength of an indirect effect may depend on the value of a moderator, such as age or gender[106]. A conditional indirect effect, or moderated mediation, is defined by Preacher et al.[107] (p. 186) as the "magnitude of an indirect effect at a particular value of a moderator". Tests for conditional indirect effects are less frequent due to confusion about the terms, and methods of analysis and the relative lack of

moderator and mediator analyses compared predictor studies has been criticised[54]. Gardner et al.[52] emphasised the need for PT studies to develop testable models of moderator effects, including how mechanisms might vary by moderator. Because a conditional indirect effect is merely the product of two causal path estimates conditioned on the value of one or more moderators, bootstrapping can be applied as it can to unconditional indirect effects[107]. No assumptions need be made about the shape of the sampling distribution as it is estimated non-parametrically through bootstrapping, and CIs generated. Moderated mediation analyses were conducted with 5000 bootstrapped samples using MODMED macros for SPSS[107], which support command syntax for moderated mediation analyses.

4.9 Results

4.9.1 Sample characteristics

Participant flow is shown in Figure 4.2. The sample was over-represented by mothers and male children, which is common in studies of this kind. 17% were single parents, which is higher than the UK average of 7%[52], although Lundhal et al.[25] reported a mean percentage of single parents participating in PT of 36.3% (SD 20.78). The mean age of the index child for whom the intervention was targeted was 8.9 years, and similar across male and female children.

Figure 4.2: Participant flow

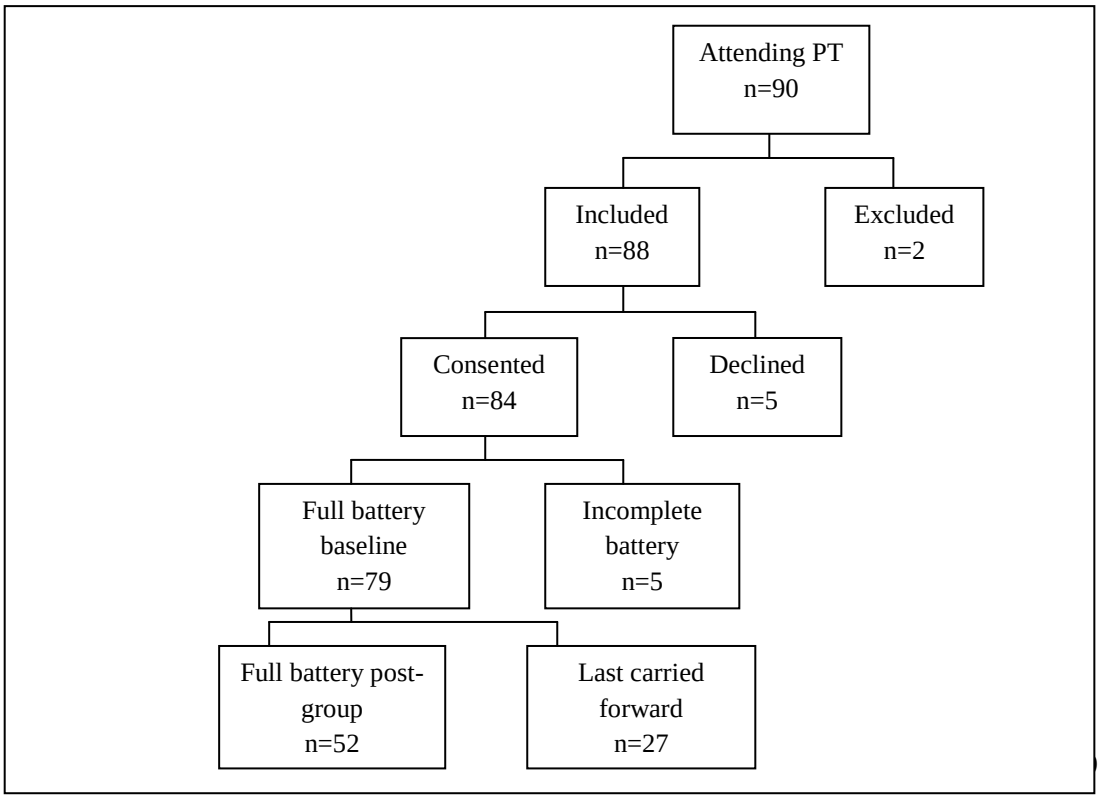


Table 4.1: Participant characteristics

Demographic	n (%)	Mean	SD	Range
Mother	62 (78.5)			
Age		36.5		25-51
Number of children		2.5		
Father	14 (17.7)			24-59
Age		38.6		
Number of children		2.9		
Grandparent	3 (3.8)			51-64
Age		57.7		
Number of children		2.7		
Total caregiver age		37.7		25-64
Total number of children		2.6		1-6
Male	72 (91.1)			
Age (mths)		106.5	27.0	
Female	7 (8.9)			
Age (mths)		106.6	15.8	
Total	79	106.5	26.1	
Above clinical cut off:				
ECBI-I	64 (81.0)	162.2	30.79	78-221
ECBI-P	62 (78.5)	20.7	8.50	1-36
Employment status:				
Missing	2 (2.5)			
Employed	26 (32.9)			
Unemployed	13 (16.5)			
Homemaker/retired/other	35 (44.3)			
Student	3 (3.8)			
Relationship status:				
Missing	1 (1.3)			
Single/divorced/separated/widowed	27 (34.2)			
Married/cohabiting	50 (63.2)			
Other	1 (1.3)			
Education:				
Some high school or below	50 (63.3)			
High school graduate without college education	4 (5.1)			

College graduate/Some college education	6 (7.5)
Degree from 4 year college or more	19 (24.1)
Attendance at previous PT	31 (39.2)
Concurrent Dinosaur school	68 (86.1)

Before treatment, between 78.5% and 81% of children presented with clinical levels of problem behaviour depending on the subscale used (Table 4.1). This proportion compares favourably with studies which have reported mean ECBI scores of 129.72 and 13.79 respectively, with only 49.5% of the sample in the clinical range[45]. Kolmogorov-Smirnov tests of normality indicated a non-normal distribution of scores on all measures except baseline ECBI-P and RSQ anxiety, and post-treatment PCS-PC and RSQ anxiety measures. Table 4.2 presents a summary of the predictor and outcome measures at Time 1 and Time 2 using the appropriate analyses. Significantly lower post-treatment levels of child responsible and parent-causal attributions, and higher levels of parenting self-efficacy, are in the desired direction. The non-significant results for changes to attachment style are expected given the stability of our internal working models[79], although a greater number of positive ranks suggests that levels of attachment-avoidance had increased post-treatment, contrary to expectations. Correlations between all predictor variables and the primary outcome are shown in Table 4.3. This shows that the majority of questionnaire constructs are significantly correlated, and that the available tests for multi-collinearity generated by SPSS should be observed to consider whether these are at levels that are detrimental to the model.

Table 4.2: Post treatment effects on parent characteristics and child behaviour.

	Pre-group		Post-group		Comparison	Effect size
Measure	**Mean(SD)**	**Range**	**Mean(SD)**	**Range**	**Two-tailed significance**	
TOPSE[a]	326.4 (62.1)	197-452	353.2 (62.0)	169-461	z = -4.796, p<.001	d= .43
PCS-CR[a]	40.3 (7.6)	20-53	37.7 (8.6)	15-53	z = -3.301, p<.001	d= .32
PCS-PC[a]	20.68 (6.0)	8-34	18.0 (5.3)	9-32	z = -4.919, p<.001	d= .47
RSQ – AN[b]	37.23 (13.32)	15-71	37.61 (14.54)	15-75	t = -.40, df 78, p< .690	ns
RSQ – AV[a]	42.46 (12.57)	19-75	44.01 (13.47)	17-71	z = -1.278, p<.201	ns
ECBI – I[a]	162.2 (30.79)	78-221	152.5 (34.1)	76-221	z = -3.390, p<.001	d= .30
ECBI – P[ac]	20.7 (8.50)	1-36	18.4 (9.75)	1-31	z = -3.630, p<.001	d= .25

Note: [a] Wilcoxon matched-pair signed-rank non-parametric test; [b] Paired sample parametric t-test; [c] n=78 (1 missing case)

ECBI – I/P: Eyberg Child Behavior Inventory (Intensity/Problem subscale)

PCS – CR/PC: Parent Cognition Scale – Child Responsible/Parent-Causal subscale

TOPSE: Tool Of Parenting Self-Efficacy

RSQ – ANX/AV: Relationship Scales Questionnaire – ANXIOUS/AVOIDANT subscale

Table 4.3: Intercorrelations among study variables

	ECBI-I	ECBI-P	PCS-CR	PCS-PC	TOPSE	RSQ-AN	RSQ-AV
ECBI-I		.642**	.512**	.085	-.389**	.314**	.276*
ECBI-P			.580**	.149	-.474**	.302**	.335**
PCS-CR				.277*	-.436**	.212	.189
PCS-PC					-.570**	.424**	.222*
TOPSE						-.368**	-.224*
RSQ-ANX							.584**
RSQ-AV							

Note: *p<.05, **p<.01, ***p<.001

4.9.2 Primary outcomes

PT studies outcome have defined 'treatment outcome' in terms of statistical, clinical, and reliable change, although the predictors of statistically versus clinically significant change are similar[108,109]. Statistically, there was a significant decrease in parent-reported intensity and frequency of problem behaviour between baseline and post-treatment ($z = -3.390$, $p<.001$; $z = -3.360$, $p<.001$). Clinically, cut-off scores on the intensity (>131) and problem (>15) subscales of the ECBI indicate a return to sub-clinical levels for a proportion of families. Categorising children into 'clinical' or 'non clinical' subgroups and using Pearson's Chi-square shows that a reduction from 64 (81%) to 60 (75.9%) children (or 5.1% of the sample) to sub-clinical levels on the intensity scale was significant, χ^2 (1) = 31.73, $p<.001$. Pre-treatment, 62 (78.5%) children were rated above the clinical threshold on the problem subscale, which reduced to 49 (62.8%) post-treatment. This larger reduction of a further 13 (15.7%) children was also significant, $\chi^2 = 38.82$, $p<.001$. Therefore, the estimated rates of children with sub-clinical levels had shifted from a minimum of 19% to a maximum of 37.2% of the total sample depending on the subscale. As this reflects data carried forward from non-completers, the improvements in families who attended may be even greater.

4.9.3 Regression findings

In theory, variables can serve as both predictors, moderators and mediators of outcome[36]; failure to account for the predictive effects of baseline parenting could lead to the mistaken inference that treatment effects are mediated by parenting change, when in fact they are driven by pre-treatment differences in parenting behaviour. Modelling both predictive and mediating effects addresses this potential confound. A forced entry multiple regression examining the predictors of pre-treatment levels of child behaviour problems (intensity subscale) showed that, after step one, the regression was significant, $F=12.25$, $p<.001$, Adjusted $R^2 = .30$. The significant predictors were parenting self-efficacy and child-responsible attributions. After step 2, the regression equation remained significant, $F=9.02$, $p<.001$, Adjusted $R^2 = .34$. At step two, parent-causal attributions became a significant predictor. Attachment avoidance or attachment anxiety scores did not contribute significantly to the model. However, addition of attachment style strengthened the β value of

parent-causal attributions to become a significant contributor. Addition of baseline attachment scores resulted in a significant increment in the Adjusted R^2 value of .04, Sig F change (2,73) = 3.14, p<.05 (Table 4.4). Checks for multi-collinearity suggested that, although the predictors are correlated, this is not to significantly detrimental levels. Removing either attachment-avoidance or attachment-anxiety scores in a stepwise regression reduced the amount of variance explained, indicating that it is the two dimensions together that exert an moderating effect on parent-causal attributions.

Table 4.4: Forced entry multiple regression for baseline predictors variables and pre-treatment levels of child problem behaviour – Intensity subscale

	B	SE B	β	t	Adjusted R^2; F
Step 1					.30; 12.25***
Constant	167.73	36.38		4.610	
Baseline TOPSE	-0.16	0.06	-.33**	-2.650	
Baseline PCS - CR	1.75	0.43	.43***	4.097	
Baseline PCS - PC	-1.12	0.59	$-.22^{ns}$	-1.910	
Step 2					.34; 9.02***
Constant	146.311	36.521		4.01	
Baseline TOPSE	-.141	.060	-.29*	-2.36	
Baseline PCS – CR	1.670	.417	.41***	4.00	
Baseline PCS – PC	-1.498	.596	-.29*	-2.51	
Baseline RSQ – ANX	.455	.284	$.20^{ns}$	1.60	
Baseline RSQ - AV	.209	.279	$.09^{ns}$	.75	

Note: *p<.05, **p<.01, ***p<.001
TOPSE: Tool Of Parenting Self-Efficacy
PCS – CR/PC: Parent Cognition Scale – Child Responsible/Parent-Causal subscale
RSQ – ANX/AV: Relationship Scales Questionnaire – ANXIOUS/AVOIDANT subscale

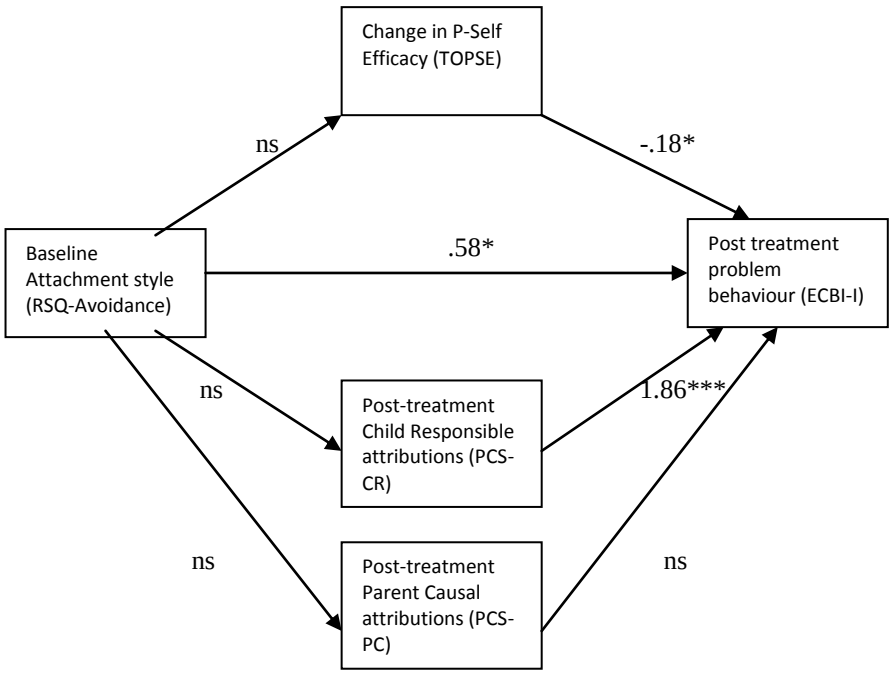
The problem subscale showed a similar profile of results, accounting for 40% of the variance in outcome at step one (F=17.91, p<.001, Adjusted R^2 .40), and 43% at step two (F=12.81, p<.001, Adjusted R^2 .43), with attachment style only contributing through a moderating effect on parent-causal attributions at step two. Addition of baseline attachment scores resulted in a significant increment of .03 in the amount of variance explained (Sig F change (2,72) = 3.41, p<.05).

4.9.4 Multiple Mediation findings

A multiple mediator analysis, using macros written by Preacher and Hayes[105] was conducted to explore whether both changes in parenting self-efficacy and parental attributions are mediators of attachment-avoidance style on outcome. Change scores were calculated using simple subtraction so a higher change score in parenting self-efficacy represents greater improvement. Using change scores ensures that baseline levels of parenting self-efficacy and parental attributions are controlled for in the analysis and has been used elsewhere[49,52]. However, no significant specific direct or indirect effects were found, and this model only accounted 13% of the variance in outcome. An alternative measure of outcome is to record the post-programme (end point) score of a measure, regardless of the size of change from baseline. Exploring the impact of different outcome approaches in the same model allows for subtle, but significant differences to be discovered that might otherwise be rejected. Examining changes in self-efficacy and end point parental attributions in the same model was significant, F=12.10, p<.001, Adjusted R^2 = .36. Figure 4.3 shows the schematic of the multiple mediator model in which both change in self-efficacy scores and end point child-responsible and parent-causal attributions were proposed to mediate the relationship between attachment style and change in child behaviour. The total indirect effect for the three proposed mediators of -.06 was not significant. Further examination of the specific contribution of each indirect effect using bias-corrected confidence intervals revealed that the lower and upper limits of CI for all potential mediators cross zero, confirming no mediator effects. However, the specific indirect effect of child-responsible attributions of .01 was significant at p<.05 (Table 4.5). A significant b_1 path demonstrates a partial effect between change in parenting self-

efficacy and post-treatment child behaviour, b_1=-.18 (t=-.233, p<.05), with higher levels of parenting self-efficacy indicating reduced levels of child problem behaviour. A partial effect of child-responsible attributions on post-treatment child behaviour was significant, b_2=1.86 (t=4.77, p<.001), with less dysfunctional child-responsible attributions linked with reduced child behaviour problems. Baseline attachment-avoidance had a significant direct effect on post-treatment child behaviour that did not exist pre-treatment (c'=.58; t=2.33, p<.05). The same parameters using the problem subscale generated a similar profile without a significant b_1 path.

Figure 4.3: Path diagram for the mediation model using TOPSE change scores and PCS end point scores (Intensity subscale).



Note: Unstandardised regression coefficients *p<.05, **p<.01, ***p<.001

Table 4.5: Mediation of the relationship between attachment avoidance style and child behaviour problems (Intensity subscale) through changes in parenting self-efficacy and end point child-responsible and parent-causal attributions

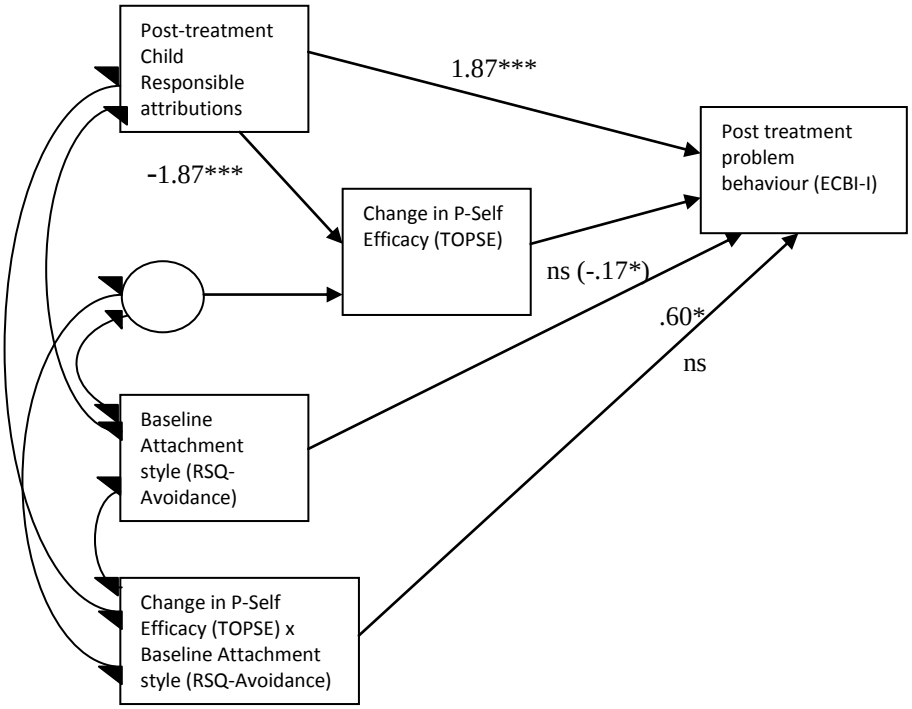
				Bootstrap BC 95% CI	
	Point Estimate	**SE**	***Z***	**Lower**	**Upper**
TOPSE	-.0503	.0735	-.6848	-.2776	.0867
PCS-CR	-.0210	.1438	-.1461	-.3080	.2766
PCS-PC	.0102*	.0342	.2994	-.0577	.1724
Total	-.0611	.1888	-.3237	-.4283	.3229
Contrasts					
TOPSE vs PCS-CR	-.0293	.1371	-.2140	-.3363	.2788
TOPSE vs PCS-PC	-.0606	.0776	-.7808	-.2600	.1421
PCS-CR vs PCS-PC	-.0312	.1457	-.2143	-.3062	.3095

Note: *p<.05, **p<.01, ***p<.001.
BC: Bias Corrected
Estimates based on 5000 bootstrap samples
TOPSE: Tool Of Parenting Self-Efficacy changes
PCS – CR/PC: Parent Cognition Scale – Child Responsible/Parent-Causal subscale end point

4.9.5 Moderated mediation

Figure 4.4 presents a simple mediation model, in which the indirect effect of child-responsible parenting attributions on child behaviour through changes in self-efficacy, is proposed to be moderated by attachment-avoidant style because attachment style moderates the effect of self-efficacy on child behaviour. This model has been used elsewhere to examine treatment effects on employment through several mediators, where the effects of those mediators on the outcomes are moderated by pre-test mental health (Donaldson, cited in[107]).

Figure 4.4: Path diagram for the moderated mediation model.



Unstandardised path coefficients for $b_1$path for MODMED and (INDIRECT) model.

The total conditional indirect effect for the proposed variables of .34 was not significant at the mean value of attachment-avoidance (42.557, p<.06), or 1 SD above or below. There was no significant interaction between attachment–avoidance and change in self-efficacy that moderated the b_1 path. A significant *c'* path shows a direct effect between child-responsible attributions and outcome (*c'* =1.87, t=4.80, p<.001). A partial effect of end point child-responsible attributions on change in self-efficacy was significant (a_1 =-1.87, t=-3.41, p< .001), as was baseline attachment on outcome (b_2= .60, t=2.03, p<.05). A similar profile was generated using the problem subscale. Running regressions without attachment-avoidance as a moderator variable generated the same unstandardised path coefficients, but with a significant b_1 path that did not exist with it in the model (t=-.218, p<.05), and a significant *ab* path with lower and upper CI limits that did not cross zero (.0779 to .7527), suggesting that attachment-avoidance contributed to the model by reducing the mediating effects of changes in self-efficacy and the partial effect of changes in self-efficacy on child behaviour.

4.10 Discussion

The main objective of this study was to investigate whether three parent characteristics influence parent-reported levels of child problem behaviour before and after attendance at PT in a clinical setting. The findings estimate a small effect size for statistically significant reductions in externalising behaviour problems. Treatment effects were lower than studies conducted by larger research teams, however, community replications do not always achieve the same outcome as the original evaluation[110]. Although the mean ECBI-P score only dropped by 2.3 points, there was a significant clinical impact. Rates of clinical levels of problem behaviour reduced by up to 15.7%, compared with 23.1% in a study using the same intervention and outcome measure[40]. This is promising considering conservative analyses assumed no change for non-completers. However, while this reflects the extent to which therapy moved some children out of the dysfunctional range, alternative methods for defining clinically meaningful change in psychotherapy research exist, which might generate different conclusions. For example, Jacobson and Truax[109] propose a more robust twofold criterion for an index of reliable change that requires consideration of whether the magnitude of change for a given individual is statistically reliable, in addition to falling below a clinical cut threshold.

In addition, improvements in parenting self-efficacy and reductions in dysfunctional child-responsible and parent-causal attributions were observed. This suggests that PT is more effective when it addresses dysfunctional child-responsible attributions and increases self-efficacy. However, the improvements cannot be solely attributed to the parenting intervention as some children attended child training concurrently, and the design lacks a control group. In addition, 39.2% of parents reported they had attended some form of PT previously; over half (58.1%) of which specified this was another IY group, a figure that could be augmented by up to a further 22.6% by participants who reported attending a parenting group previously, but not which one. The previous experience of these parents may have influenced their attributions about the potential for change. For example, a parent who believes that they changed their parenting following a previous group will be more likely to attribute outstanding behaviours to the child. In combination, the selected variables accounted

for up to 40% of variance in pre-treatment child behaviour problems. Baseline self-efficacy and child-responsible attributions made significant contributions, as did parent-causal attributions on addition of both insecure attachment styles. Neither attachment style was a significant contributor in its own right, but in combination they exerted a positive moderating effect on parent-causal attributions.

The second aim was to explore more complex relationships. Attachment style is not known to have been previously selected as a candidate variable, and extraction of two factors on the RSQ restricted hypotheses to 'insecure' styles, which would be proposed barriers to treatment. No significant change in attachment scores was observed as expected[79], although mean avoidant scores had increased which goes against the IY model that aims to maximise engagement. Change in parenting self-efficacy, end point child-responsible attributions and baseline attachment avoidance were significant contributors to the multiple mediator model accounting for 36% of the variance. No variable was a significant mediator of the effect of attachment style on post-treatment levels of child problem behaviour, although change in parenting self-efficacy and post-treatment child responsible attributions had significant partial effects on improved behaviour. The absence of significant mediators, most likely to be mechanisms of change, suggests that there are outstanding variables that contribute further effects to the model. Analyses found an interesting relationship between attachment style and child behaviour at different points of treatment. At baseline, neither attachment style contributed to child behaviour in its own right, but collectively they moderated parent-causal attributions to a greater extent in the model, possibly due to activation of defences against personal criticism. Post-group, attachment-avoidance showed a significant direct effect on outcome which did not exist at baseline, but attachment-anxiety did not, possibly due to the loading of factors.

Moderated mediation macros allowed for a more sophisticated analysis of whether attachment-avoidant style affected the magnitude of change through self-efficacy. Removing attachment from the model increased the number of significant partial and mediated pathways, showing a negative moderating effect compared to baseline. As

moderator variables identify for whom and under what circumstances treatments exert effects, this suggests that higher levels of attachment-avoidance reduce the potential for change by limiting the impact of change in self-efficacy and reduction in dysfunctional child attributions. The challenge for mediator analyses is to demonstrate that change in the mediators occurs before change in the outcome[111], which were not possible due to the collection of predictor and outcome data in close proximity.

The demographic profile suggests that participants were representative of families seeking help for problem behaviour. However, the majority of parents attended IY within a multidisciplinary service that enabled a neuro-developmental disorder to be diagnosed during the programme. If parents attributed problem behaviour to an underlying disorder, they may have been less motivated to complete PT. Nonetheless, the IY programme is designed to promote positive parenting and reinforce the parents' role as the agent of change regardless of the cause of the behaviour. The influence of parent-causal attributions on outcomes was consistently less significant than child-responsible attributions, despite significant reductions in dysfunctional beliefs at the end of treatment. As a relatively new measure, this may indicate that the parent-causal dimension is not as well defined. Alternatively, the shift may be unrelated to the programme content, and due to other external factors. Despite significant shifts in attributions, the results suggest that these are not responsible for behaviour change, and there is limited reach for a behavioural PT to effect lasting change in appraisals. Increased levels of parenting self-efficacy were linked to improved outcomes in a number of models. Where clear understanding of techniques is not translated into behaviour change, it is possible that dysfunctional attributions are preventing changes in parenting. The need to include parents' perceptions about caregiver efficacy in clinical formulations, and as explicit targets for therapeutic interventions has been recommended to ensure that PT addresses skill acquisition and techniques for altering efficacy beliefs[67].

The finding that insecure aspects of an individual's attachment style contribute to existing levels of child behaviour through a moderating effect on parent-causal

attributions is contrary to expectations. An avoidant style is associated with distrust of close relationships and desire to be independent of others, both of which are likely to have a negative impact on the ability to form therapeutic relationships and disclose information in a group setting. Meaningful participation requires being receptive to new ideas and actively contributing to group discussion, for which insecure attachment would be a barrier[112]. Nix et al.[113] found that attendance at PT was less of a predictor of change in parenting style than the quality of participation, suggesting that attempts to maximise active engagement in the collaborative process is equally important. The findings that attachment avoidance has a direct effect on outcome by the end of treatment that did not exist pre-treatment suggests that programme components that engage hard to reach parents are equally important as the content. However, whilst secure attachment styles may seem more beneficial to therapy, greater relative improvement may sometimes occur for patients with insecure forms of attachment. These parents may require targeted interventions to overcome their detachment, but on engagement, the improvement might be greater[55]. Regular attendance throughout the programme suggests that the parents were engaged with the programme, and as their insecure aspects of attachment were dimensions, not traits, it is equally possible that the secure dimensions of the participants' attachments were sufficient to allow the exploration of difficult topics, from the 'safe base' of the group setting.

However, in addition to therapeutic engagement, attachment style will influence a parent's ability to deal with challenging situations if they are less able to cue into the emotional needs of their child and mirror their affect. Parents who employ over-regulatory strategies might intervene too much, whilst those who under-regulate may be more rejecting. The results stay true to the behavioural nature of the PT which does not attempt to alter the attachment relationship. However, it is possible that the behavioural techniques introduced allow parents to be less intuitive in their response and provide practical ways to override their normal regulatory strategies.

The limitations of this study are common to research conducted in clinical settings with hard to reach families. Follow up data was not available for 34.2% of

participants. In a review examining premature drop-out, Forehand et al.[114] reported an average rate of 28%, while others have found a rate approaching 50%[38]. However, this is not an accurate reflection of the number of parents who did not complete the programme, as some parents were still engaged but not present. Others had disengaged from PT but continued to bring their child for CT, suggesting that their child-responsible attributions were a stronger driver of change. Studies have found that limited attendance at PT is associated with poorer outcomes, presumably because without attendance the relevant parent skills are not learned. However, as registers were not always available, information about attendance rates and treatment dose is absent. Parents were the sole informants for both the predictor and outcome variables which increase the risk of bias. Observational approaches and ratings from multiple sources and settings are preferable to ensure a less biased response. As the majority of children were attending concurrent Dinosaur school, behavioural ratings could have been sought from keyworkers observing them in a classroom setting. Since this was a routine outcome monitoring study, there was no control group for comparison, making it difficult to say whether the improvement in parent reported child behaviour was due to the intervention. By reporting data at two time points, pre- and post-intervention, temporal separation of the variables in the mediation analysis was not possible that would lend more support for a causal mechanism[32]. Despite these limitations, obtaining data from fifteen groups delivered by twelve group leaders across a two year period in a 'real world' setting has potential to contribute to the evidence base.

There are some research implications following from this study. Mechanisms based on common therapeutic factors may be responsible for change; expectancies for change and therapeutic alliance are hypothesized mechanisms of change that have not been examined in PT[115]. The findings from this study suggest that the role of attachment style warrants further testing with larger sample sizes. The dyadic attachments in parents may be of interest in future studies, particularly if change is most limited in dual-insecure relationships[116]. However, the assessment of attachment style is notoriously difficult; the RSQ is a measure of attachment in romantic adult relationships, and more appropriate measures of therapeutic alliance

might provide different results[117]. The clinical implications for the present study extend beyond the service in which the PT was delivered. Findings suggest that the insecure aspects of parents' attachments styles do influence the collaborative, group-based delivery of the IY programme and should be recognised, if not formally assessed. In delivering the manualised content of PT, finding opportunities to increase levels of self-efficacy and reduce child-responsible attributions might promote greater changes in problem behaviour.

These findings add to a growing evidence base about variables that directly or indirectly influence outcomes following attendance at PT in 'real world' settings[118]. While parenting self-efficacy has been a popular candidate, this study used a measure that reduced overlap with similar constructs. Likewise, a measure of dysfunctional parenting attributions highlighted a consistent role for child-responsible attributions as a predictor, and partial mediator of child behaviour which has not previously been explored. Parent-responsible attributions was less significant in their own right, but were moderated by insecure attachment. Parenting self-efficacy and parental attributions were correlated as expected, but not to detrimental levels, suggesting that new measures are being designed with more distinct constructs. The impact of attachment on the therapeutic process cannot be ignored in the PT literature, and needs to be explored with appropriate measures. A key problem for mental health services is how to deliver evidence based parenting interventions in an efficient and effective way to families most on need. This study has identified some parent characteristics that warrant further investigation with larger clinical samples to ensure that the evidence base is informed by studies using those parents who stand to gain most from the findings.

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Chapter 5: Appendices

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Appendix 5.1 JAACAP author guidelines

Journal of the American Academy of
CHILD & ADOLESCENT PSYCHIATRY

Instructions for Authors

SCOPE

The *Journal of the American Academy of Child & Adolescent Psychiatry's (JAACAP)* goal is to advance the science of child and adolescent psychiatry by publishing original research and papers of theoretical, scientific, and clinical relevance to the field. *JAACAP* welcomes unpublished manuscripts whose primary focus is on the mental health of children, adolescents, and families. Submissions may come from diverse viewpoints including but not limited to: genetic, epidemiological, neurobiological, and psychopathological research; cognitive, behavioral, psychodynamic, and other psychotherapeutic investigations; parent-child, interpersonal, and family research; and, clinical and empirical research in inpatient, outpatient, consultation-liaison, and school-based settings. *JAACAP* also seeks to promote the well-being of children and families by publishing scholarly papers on such subjects as health policy, legislation, advocacy, culture and society, and service provision as they pertain to the mental health of children and families.

TYPES OF MANUSCRIPTS

We wish to receive only papers in which the subjects are 18 years of age or younger unless the subjects are parents or have been followed since childhood. Papers that clearly do not fit our format, mission, or publication priorities will be returned without review. All New Research and Review articles considered for publication will undergo peer review.

New Research articles are reports of original work that contribute, analyze, and/or explain new evidence and data from a sizeable group of patients. They must be no longer than 6,000 words (all word counts include the title page, abstract, text, references, tables, figures, and figure legends.

Review articles (theoretical or critical analyses of the literature) must be invited by the Editor, Associate Editor, or Deputy Editors. Inquiries about potential topics are welcome. Authors can propose topics for Review articles by submitting their proposal to Mary Billingsley at mbillingsley@jaacap.org. Including an abstract or brief summary of the proposed review is recommended.

Clinical Review articles seek to address the everyday needs of practitioners working 'in the trenches,' and are practical in nature. In general, contributions to Clinical Reviews are invited by the Editor, Associate Editor, or Deputy Editors. Inquiries about potential topics are welcome. Authors can propose topics for Clinical Review articles by submitting their proposal to Mary Billingsley at mbillingsley@jaacap.org. Including an outline of the proposed Clinical Review is recommended.

Letters to the Editor do not require pre-approval and should be formatted according to the instructions listed under Letters to the Editor.

Other: Ideas for Translations, Clinical Perspectives, special series, or special communications must be approved by the Editor before submission. In general, *JAACAP* solicits contributions to Editorials, Translations, Clinical Perspectives, and the Book Forum. However, interested authors are encouraged to contact Mary Billingsley at mbillingsley@jaacap.org to propose potential submissions.

MANUSCRIPT PREPARATION

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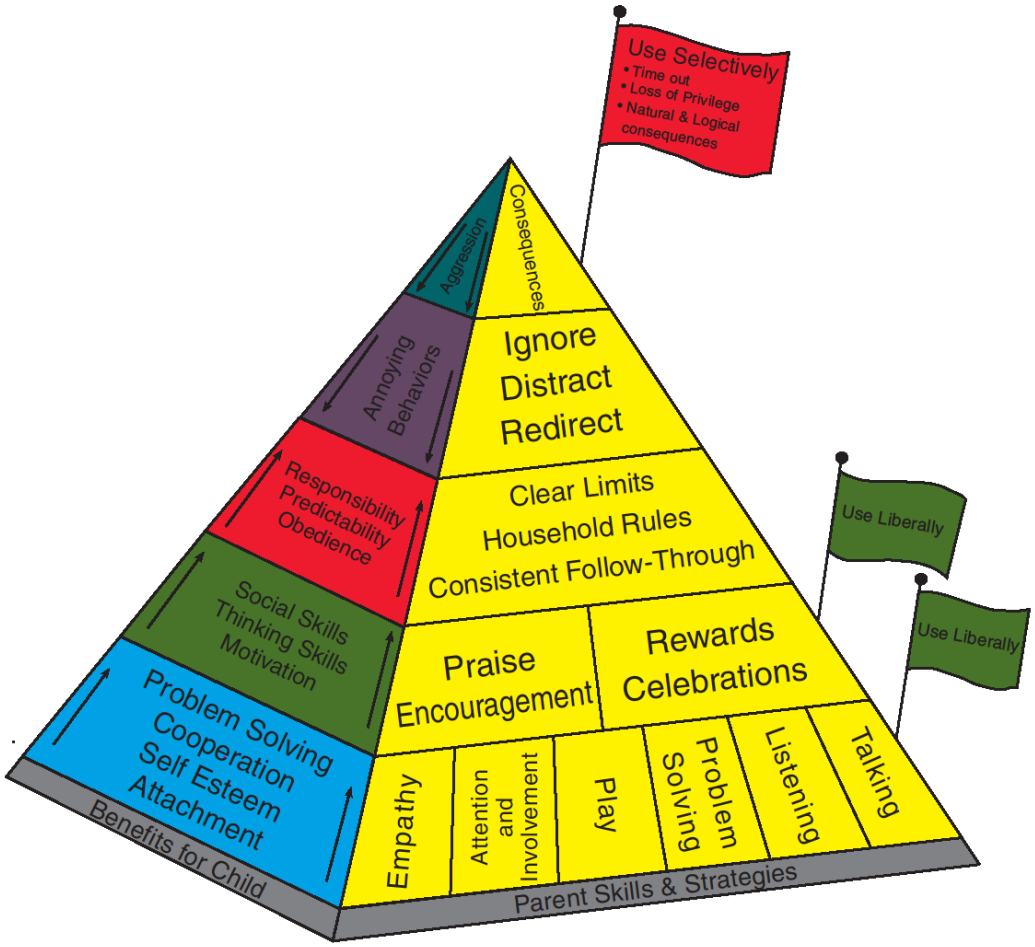
Medical and health journalists may request the full text of embargoed articles by contacting the Editorial Office. Upcoming articles can be found under the Articles in Press on www.jaacap.org. Press officers from research institutions may inquire about projected publication dates for articles by authors affiliated with their organization.

Appendix 5.2 The Incredible Years Parenting Pyramid



Parenting Pyramid

Appendix 5.3: Parent Cognition Scale (Snarr et al. 2009)

PCS

Instructions: At one time or another, all children misbehave or do things that could be harmful, that are wrong, or that parents don't like. Examples include:

hitting someone	whining	not cleaning room	not doing homework
lying	refusing to go to bed	arguing back	taking things that aren't theirs
having a tantrum	cursing	coming home late	running into the street

Parents have many different ways of thinking about these types of problems, and may think differently about problems depending on their specific children.

Please rate how much you would agree, in general, that the following **reasons** for misbehavior are true for the **target child** and his/her behavior for the **past two months**:

	Always True	Frequently True	Sometimes True	Occasionally True	Rarely True	Never True
1. I was not as firm as I usually am.	1	2	3	4	5	6
2. My child won't listen.	1	2	3	4	5	6
3. I'm not structured enough with my child.	1	2	3	4	5	6
4. My child cannot understand the rules.	1	2	3	4	5	6
5. My child thinks that he/she is the boss.	1	2	3	4	5	6
6. I don't know how to handle my child.	1	2	3	4	5	6
7. I don't give my child enough attention.	1	2	3	4	5	6
8. My child is headstrong.	1	2	3	4	5	6
9. It's hard for me to set limits.	1	2	3	4	5	6
10. My child is in a stage.	1	2	3	4	5	6
11. My child wants what he/she wants when he/she wants it.	1	2	3	4	5	6
12. I was tired at the time.	1	2	3	4	5	6
13. I handle my child in a non-confident way.	1	2	3	4	5	6
14. My child purposely tries to get me angry.	1	2	3	4	5	6
15. My child feels like there is no time for him/her.	1	2	3	4	5	6
16. I'm not patient.	1	2	3	4	5	6
17. My child tries to get my goat or push my buttons.	1	2	3	4	5	6
18. My child wants things his/her way.	1	2	3	4	5	6
19. It's difficult for my child to do what I want.	1	2	3	4	5	6
20. I can't control my child.	1	2	3	4	5	6
21. I couldn't respond quickly enough at the time.	1	2	3	4	5	6
22. I'm not able to be clear.	1	2	3	4	5	6
23. My child is very demanding.	1	2	3	4	5	6
24. I handled things in an unusual way.	1	2	3	4	5	6
25. My child likes to see how far he/she can push me.	1	2	3	4	5	6
26. I was busy with something at the time.	1	2	3	4	5	6
27. I don't do the right thing.	1	2	3	4	5	6
28. My child tires easily.	1	2	3	4	5	6
29. I have a hard time really listening to my child.	1	2	3	4	5	6
30. My child refuses to do what I think he/she should do.	1	2	3	4	5	6

Appendix 5.4: Tool of Parenting Self-Efficacy (Kendall & Bloomfield, 2005)

Child's Name:_____ **Today's Date:**_____

Using the scale below, please enter in the boxes how much you agree with each statement. The scale ranges from 0 (completely disagree) to 10 (completely agree). You may use any number between 0 and 10.

Please answer all statements.

0	1	2	3	4	5	6	7	8	9	10
Completely disagree				Moderately agree				Completely agree		

This section is about emotion and affection	**Your rating (0-10)**
a) I am able to show affection towards my child.	
b) I can recognise when my child is happy or sad.	
c) I am confident my child can come to me if they're unhappy.	
d) When my child is sad I understand why.	
e) I have a good relationship with my child.	
f) I find it hard to cuddle my child.	

This section is about play and enjoyment	**Your rating (0-10)**
a) I am able to have fun with my child.	
b) I am able to enjoy each stage of my child's development.	
c) I am able to have nice days with my child.	
d) I can plan activities that my child will enjoy.	
e) Playing with my child comes easily to me.	
f) I am able to help my child reach their full potential.	

This section is about empathy and understanding	**Your rating (0-10)**
a) I am able to explain things patiently to my child.	
b) I can get my child to listen to me.	
c) I am able to comfort my child.	
d) I am able to listen to my child.	
e) I am able to put myself in my child's shoes.	
f) I understand my child's needs.	

This section is about control	**Your rating (0-10)**
a) As a parent I feel I am in control.	
b) My child will respond to the boundaries I put in place.	
c) I can get my child to behave well without a battle.	
d) I can remain calm when facing difficulties.	
e) I can't stop my child behaving badly.	
f) I am able to stay calm when my child is behaving badly.	

Please turn over

0	1	2	3	4	5	6	7	8	9	10
Completely disagree				Moderately agree				Completely agree		

This section is about discipline and setting boundaries	Your rating (0-10)
a) Setting limits and boundaries is easy for me.	
b) I am able to stick to the rules I set for my child.	
c) I am able to reason with my child.	
d) I can find ways to avoid conflict.	
e) I am consistent in the way I use discipline.	
f) I am able to discipline my child without feeling guilty.	

This section is about pressures	Your rating (0-10)
a) It is difficult to cope with other people's expectations of me as a parent.	
b) I am not able to assert myself when other people tell me what to do with my child.	
c) Listening to other people's advice makes it hard for me to decide what to do.	
d) I can say 'no' to other people if I don't agree with them.	
e) I can ignore pressure from other people to do things their way.	
f) I do not feel a need to compare myself to other parents.	

This section is about self-acceptance	Your rating (0-10)
a) I know I am a good enough parent.	
b) I manage the pressures of parenting as well as other parents do.	
c) I am not doing that well as a parent.	
d) As a parent I can take most things in my stride.	
e) I can be strong for my child.	
f) My child feels safe around me.	

This section is about learning and knowledge	Your rating (0-10)
a) I am able to recognise developmental changes in my child.	
b) I can share ideas with other parents.	
c) I am able to learn and use new ways of dealing with my child.	
d) I am able to make the changes needed to improve my child's behaviour.	
e) I can overcome most problems with a bit of advice.	
f) Knowing that other people have similar difficulties with their children makes it easier for me.	

Thank you very much for completing this questionnaire.

Appendix 5.5: Relationship Scales Questionnaire (Griffin & Bartholomew, 1994)

Relationship Scales Questionnaire (RSQ)

Indicate below whether each item is true or false	True	False
1. I find it difficult to depend on other people.		
2. It is very important to me to feel independent.		
3. I find it easy to get emotionally close to others.		
4. I want to merge completely with another person.		
5. I worry that I will be hurt if I allow myself to become too close to others.		
6. I am comfortable without close emotional relationships.		
7. I am not sure that I can always depend on others to be there when I need them.		
8. I want to be completely emotionally intimate with others.		
9. I worry about being alone.		
10. I am comfortable depending on other people.		
11. I often worry that romantic partners don't really love me.		
12. I find it difficult to trust others completely.		
13. I worry about others getting too close to me.		
14. I want emotionally close relationships.		
15. I am comfortable having other people depend on me.		
16. I worry that others don't value me as much as I value them.		
17. People are never there when you need them.		
18. My desire to merge completely sometimes scares people away.		
19. It is very important to me to feel self-sufficient.		
20. I am nervous when anyone gets too close to me.		
21. I often worry that romantic partners won't want to stay with me.		
22. I prefer not to have other people depend on me.		
23. I worry about being abandoned.		
24. I am uncomfortable being close to others.		
25. I find that others are reluctant to get as close as I would like.		
26. I prefer not to depend on others.		
27. I know that others will be there when I need them.		
28. I worry about having others not accept me.		
29. Romantic partners often want me to be closer than I feel comfortable being.		
30. I find it relatively easy to get close to others.		

Appendix 5.6: Participant Information Sheet

Participant Information Sheet Version 1.0 5th February 2011

Participant Information Sheet

Study title: Parenting interventions: who benefits and how do they work?
Protocol reference: 11/AL/0050

You are invited to take part in a research study. Before you decide, I would like you to understand why the research is being done and what it would involve for you. Please take time to read through this information sheet, and talk to others about the study if you wish. Please ask if there is anything that is not clear, you are welcome to ask any questions you might have. Part 1 tells you the purpose of this study and what will happen to you if you take part. Part 2 gives you more detailed information about the conduct of the study.

PART 1

What is the purpose of this study?
There are a variety of parenting programmes that aim to help parents to manage child problem behaviours more effectively. The Incredible Years parenting programmes have been found to be effective with a wide range of families, in a number of countries including USA, Sweden, New Zealand and the UK. While we know that attending a group is helpful for most parents, we still do not know why some parents benefit more than others, or what parts of the group are responsible for any changes. Knowing this would help us to offer parents the parenting groups that are best suited to their needs, and to ensure that this is done as efficiently as possible.

Why have I been invited?
Parents attending Incredible Years parenting groups in 2011/2012 will be invited to take part in the study. It is important to use groups that are running in real life settings to get a realistic picture of the needs of local families.

Do I have to take part?
No, it is up to you to decide whether you wish to participate or not. If you decide to take part, you will be asked to sign a consent form to confirm this. You can withdraw from the study at any time, and this will not affect the rest of your time on the group, or any future services you may need. If you withdraw from the study, I will use the data from the questionnaires you have already completed, unless you request that this is removed.

What will happen to me if I take part?
You will attend the Incredible Years parenting programme as normal. You will be asked to complete four brief questionnaires on two occasions; before the first session, half way through the group, and after the last session. The questionnaires will be handed out in the group setting, and should take approximately 30 minutes to complete. Your participation in the study will end after the Incredible Years group has finished.

What will I have to do?
You will be asked to fill out 4 questionnaires about your views and experiences about parenting a school-aged child. It is not a test and there are no right or wrong answers. All personal details will be removed from the questionnaires.

What are the possible disadvantages and risks of taking part?
Answering questions about being your experience of being a parent may feel intrusive. Although the shortest questionnaires have been chosen, it may feel like you are answering a lot of questions. Your personal details will be removed from the questionnaires, and individual responses will not be discussed. The exception to this is if information included in the questionnaire indicates that you or someone close to you may be at risk of harm.

What are the possible benefits of taking part?
I cannot promise that the study will help you on this occasion, but the information I get from this study may help to improve the treatments offered to parents who are struggling to manage their child's problem behaviours.

What if there is a problem?
Any complaint about the way you have been dealt with during the study will be addressed. The detailed information on this is given in Part 2.

Will my taking part in the study be kept confidential?
Yes. We will follow ethical and legal practice and all information about you will be handled in confidence. The details are included in Part 2.

This completes Part 1.

If the information in Part 1 has interested you and you are considering participation, please read the additional information in Part 2 before making any decision.

PART 2

What will happen if I don't want to carry on with the study?
You can withdraw from the study at any time. This will not affect your participation in the Incredible Years group, or put you at a disadvantage for any future services you may need. If you withdraw from the study, I will use the data from the questionnaires you have already completed up to withdrawal, unless you request that this is removed.

What if there is a problem?
If you have a concern about any aspect of this study, you should ask to speak to the researcher, Holly Jones (tel: 0131 537 6364), and I will do my best to answer your questions. If you remain unhappy and wish to complain formally, you can do this through NHS Complaints Procedure.

In the event that something goes wrong and you are harmed during the research and this is due to someone's negligence then you may have grounds for a legal action for compensation against NHS Lothian and the University of Edinburgh, but you may have to pay your legal costs. The normal NHS complaints mechanisms will still be available to you if appropriate.

Will my taking part in the study be kept confidential?
The handling, processing, storage and destruction of your data will be managed within NHS guidelines. All information which is collected about you during the course of the research will be kept strictly confidential. Your personal information will be removed from the questionnaires and destroyed so that you cannot be recognised. The extracted data from your questionnaires will be allocated a code so that any further questionnaires you complete can be matched up. This information will be stored on a database that is password protected and can only be accessed by the researcher. This will be kept for a period of 12 months after the end of the study, and thereafter destroyed.

What will happen to the results of the research study?
The results will be written up and submitted as part requirement of a Doctorate in Clinical Psychology. They may be submitted for publication in a scientific journal. The data will have been collected from a number of Incredible Years groups, and no individuals who have taken part will be identified in any article or publication. It is not possible to give parents individual feedback, but a brief summary of the overall results will be made available to participants in 2012. Please indicate if you wish to have copy forwarded to you. (circle) YES NO

Who has reviewed the study?
All research in the NHS is looked at by an independent group of people, called a Research Ethics Committee, to protect your interests. This study has been reviewed and given favourable opinion by the South East Scotland Research Ethics Committee.

Appendix 5.7: Participant consent form

Consent form version 1.0 — 5th February 2011

NHS Lothian

Consent form

Title of project: Parenting interventions: who benefits and how do they work?
Name of researcher: Holly Jones
Study reference number: 11/AL/0050
Patient identification number for this trial:

Please initial box

1. I confirm that I have read and understood the information sheet dated February 2011 (version 1.0) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my clinical care or legal rights being affected. ☐

3. I understand that data collected during the study may be looked at by individuals from NHS Lothian and the University of Edinburgh for the purpose of this research study. ☐

4. I agree to take part in the above study. ☐

_____	_____	_____
Name of participant	Date	Signature
_____	_____	_____
Name of person taking consent	Date	Signature

When completed: 1 for participant, 1 for researcher file, 1 (original) to be kept in medical notes.

Appendix 5.8: Ethics approval

South East Scotland Research Ethics Service

Waverley Gate
2-4 Waterloo Place
Edinburgh
EH1 3EG

NHS Lothian

Name: Matthias Schwannauer
Address: School of Health in Social Science
Teviot Place
Edinburgh
EH9 9AG

Date: 14/02/2011
Your Ref:
Our Ref: 11/AL/00/50
Enquiries to: Alex Bailey
Direct Line: 0131 465 5679
Email: alex.bailey@nhslothian.scot.nhs.uk

Dear Matthias,

Full title of project: Parental attachment, attributions and self efficacy as moderators and mediators of outcome in an evidence-based parenting intervention: who benefits and how does it work?

You have sought advice from the South East Scotland Research Ethics Service on the above project. This has been considered by the Scientific Officer and you are advised that, based on the submitted documentation (Checklist.pdf, College of Humanities and Social Science letter.JPG, Consent form.doc, Cover letter.doc, Eyeberg side 1.JPG, Eyeberg side 2.JPG, Indemnity letter.pdf, Participant information sheet.doc, PCS.pdf, protocol version 1.0.doc, RecForm_ReadyForSubmission[1.0].pdf, RSQ.doc, schwannauer cv short 2010.pdf, TOPSE side 1 (2).JPG, TOPSE side 1.JPG, User CV.msg), it does not need NHS ethical review under the terms of the Governance Arrangements for Research Ethics Committees in the UK. The advice is based on the following:

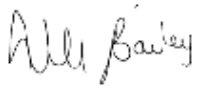
- *The project is an opinion survey seeking the views of relatives of NHS patients on service delivery.*

If this project is being conducted within NHS Lothian you should inform the relevant local Quality Improvement Team(s).

This letter should not be interpreted as giving a form of ethical approval or any endorsement of the project, but it may be provided to a journal or other body as evidence that ethical approval is not required under NHS research governance arrangements. However, if you, your sponsor/funder or any NHS organisation feels that the project should be managed as research and/or that ethical review by a NHS REC is essential, please write setting out your reasons and we will be pleased to consider further. Where NHS organisations have clarified that a project is not to be managed as research, the Research Governance Framework states that it should not be presented as research within the NHS.

You should retain a copy of this letter with your project file as evidence that you have sought advice from the South East Scotland Research Ethics Service.

Yours sincerely,



Alex Bailey
Scientific Officer
South East Scotland Research Ethics Service

1

Appendix 5.9 REAS QIT approval

Jones, Holly

From: Hutcheson, Fiona
Sent: 10 October 2012 09:25
To: Jones, Holly
Subject: Project approval

Dear Holly,

The Project Approval group for the REAS Quality Improvement Team are fully supportive of your project: *Parental attachment, attributions and self-efficacy as moderators and mediators of outcome in an evidence based parenting intervention: who benefits and how does it work*?

They wish you well for a successful project and would be glad to hear back from you after you have finished to share your findings and recommendations.

This approval will be recorded formally in the minutes of the REAS QIT meeting that will be held on 7th November.

With best wishes
Fiona

Fiona Hutcheson
Clinical Effectiveness Facilitator
Ground Floor, Pentland House
47 Robb's Loan
EDINBURGH
EH14 1TY

E-mail:

Tel: 0131 537 8533 (88533)
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